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Co-operative Demonstration Work

Agents' Meeting

February 24-27, 1914

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1914

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FARMERS' CO-OPERATIVE DEMONSTRATION WORK.

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E. S. PACE, *District Agent for North Florida.*
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9756

COUNTY DEMONSTRATION AGENTS.

	Postoffice	*County*
Stafford Burgis	Gainesville	Alachua
E. W. Turner	Macclenny	Baker
B. V. Mathis	Panama City	Bay
O. L. Mizell	Dukes	Bradford
J. D Brown	Lake City	Columbia
W. L. Watson	Jacksonville	Duval
S. W. Hiatt	Gonzalez	Escambia
Joseph Crews	Wauchula	De Soto
M. C. Gardner	Greensboro	Gadsden
R. T. Kelly	Plant City	Hillsboro
C. A. Fulford	Bonifay	Holmes
G. W. Belser	Marianna	Jackson
D. C. Geiger	Mayo	Lafayette
W. E. Brown	Williston	Levy
Frank Robinson (col.)	Tallahassee	Leon
A. W. Turner	Bristol	Liberty
D. R. McQuarrie	Madison	Madison
S. J. McCully	Berlin	Marion
C. H. Baker	Orlando	Orange
I. E. Soar	Dade City	Pasco
A. A. Lewis	Kathleen	Polk
O. O. Simmons	Botts	Santa Rosa
T. Z. Atkeson	Live Oak	Suwannee
J. C. Smith	DeFuniak Springs	Walton
D. G. McQuagge	Chipley	Washington

EACH MAN GIVEN CREDIT FOR HIS PART.

The following pages were prepared from stenographic notes taken at the time of the Co-operative Demonstration Meeting. Some of the papers were prepared beforehand and filed with the Secretary at the time they were delivered.

So far as possible every man's name was taken in connection with the discussion during the meeting. The views there expressed are the views of the parties whose names are mentioned, in connection with the discussion or the paper.

Every effort has been made to present the discussions and lectures as nearly in the form in which they were delivered as possible. In some cases the discussion was too rapid to allow it to be taken fully. In other cases the discussions carried on were identical with the material treated in the papers. Such discussions have not been dropped from the proceedings.

P. H. ROLFS.

9756

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FARMERS' CO-OPERATIVE DEMONSTRATION WORK.

The Farmers' Co-operative Demonstration work of the United States Department of Agriculture in charge of Dr. Bradford Knapp, Special Agent, has formed a co-operative agreement with the University of Florida and with the Commissioner of Agriculture of the State of Florida, whereby the Demonstration and Extension work of the State is centralized into one co-ordinated management. The University of Florida provides suitable office rooms and facilities on the University Campus for headquarters for handling the clerical work. It also pays one-half the salaries of the State and District Agents. When the State and District Agents are travelling exclusively for Farmers' Institute work all of the expenses are borne from the State funds.

The central management of the Farmers' Co-operative Demonstration Work, the Boys' Corn Clubs, and the Girls' Canning Clubs, is under the direction of Prof. C. K. McQuarrie, who is State Agent for carrying on this work. The salaries of the County Agents and other local employees are met in part by funds appropriated for this purpose by the U. S. Department of Agriculture, amounting to about $22,000. These funds are further augmented by the appropriation by the legislature of Florida of $5,000 annually. The Farmers' Institute work is provided for by annual legislative appropriation of $10,000.

The District Agents work under the direction and advice of the State Agent. The State Agent and District Agents visit the County Agents as frequently as possible, and with the County Agents make visits to the various Farm Demonstrators, the Boys' Corn Clubs, and the Girls' Canning Clubs. The State Agent and each of the District Agents are members of the faculty of the University.

The State is divided into two sections. All of the Counties organized east and south of and including Duval, Bradford, Alachua and Levy, are considered as Central and South Florida. This district is in charge of Prof. A. P. Spencer. The Counties to the northward and westward from those named, and already organized, are placed in the North Florida District, in charge of Prof. E. S. Pace.

The value of this co-operative arrangement cannot be easily over-estimated. The State and District agents being located at the seat of the University are constantly in close contact with the staff of the Experiment Station and the

professors of the Agricultural College. The County Demonstration Agents having their sessions at the University are thus enabled to come in contact with the most recent and fundamental progress that has been made in agricultural education.

The County Agents visit as many farms as possible. Where the farmer agrees to set aside a portion of a field to carry out the instructions of the County Agents fully, he is called a *demonstrator*. Where the instructions are carried out on the whole field or where the instructions are carried out only in part, the farmers are known as *co-operators*.

Every County that has entered the co-operative arrangement has been aided at the rate of $675 annually. The amount needed above this has been supplied either by the Counties as a whole, or by private or community aid. The salaries paid to County Agents vary from $800 for the lowest to $2,400 for the highest. The Counties in which the higher salaries are paid also make provision for traveling expenses.

ADDRESS OF WELCOME TO THE AGENTS.

DR. A. A. MURPHREE

Under the co-operative plan entered into by Dr. Bradford Knapp (Special Agent in charge of the Farmers' Co-operative Demonstration Work, Bureau of Plant Industry, United States Department of Agriculture) and the University of Florida, you gentlemen, State Agent, District Agents and County Agents, become a part of the State University, and a very important part. It seems, therefore, that I am extending a formal welcome to a part of the family here this morning. Be that as it may, I want to assure you that everyone here on the campus is glad to welcome you as co-laborers and fellow servants in the common cause of Agricultural Extension and rural uplift.

It has been stated that sixty-four different people are required to manufacture a pair of shoes, and that it takes the commerce and co-operation of the world to produce a breakfast. For the solution of our country-life problems and the improvement of the agricultural condition of the country, we need the whole-hearted co-operation of the farmers, bankers, transporters, merchants, churches, schools, and State.

This is a land of opportunity; but in order to realize its greatest value, co-operative effort in the application of intelligence and scientific knowledge to the common farm problems is demanded.

You, gentlemen, you county Agents, are preaching diversified agriculture, crop rotation, increase and improvement of live stock, and the intelligent use of concentrated fertilizers; you are encouraging saving and co-operative marketing, and the increase of per capita income; and you are expected to disseminate valuable scientific information. It is of the utmost importance, therefore, that you should come here at intervals to touch elbows with the investigators of the Experiment Station, and familiarize yourself with their projects. It is important that you meet these teachers, these experts in the College of Agriculture, who have endeavored to master the best methods of presenting the subjects in their respective fields of knowledge. These teachers and investigators are keeping abreast of the times, and have valuable information that perhaps will be useful to you in your activities among the farmers. In the present

Fig. 1.—County Demonstration Agents and Staff

arrangement for the integration and co-operation of the various agricultural extension activities of the State University, particularly those of its Experiment Station and Agricultural College, it is desired that there should be co-operative effort all along the line.

The University expects to derive great benefit from you through this co-operative scheme. First of all, you will present at first hand the difficult problems which you meet in the field, so that the investigators and experts can adapt their investigations to the more pressing and immediate needs of the various sections of the State.

Realizing, as you do, the great need of scientific agriculturists, you will, I am sure, endeavor to encourage every boy in your county to look forward to a course in the Agricultural College of his State University. Why not bring the farmers with you when you come up to the two-weeks course in the summer? I am sure they would reap much benefit from conference with you men, and from the lectures and instructions to be given at this conference.

Now, finally, I must urge you to command any or all of us here on this campus during the next four days, or at any time from the field when our men can be of service to you; and may the new relations into which we have entered, by virtue of the authority of the Federal Bureau and the University of Florida, be happy and joyful, mutually helpful, and abiding.

ADDRESS TO COUNTY AGENTS

H. E. Savely

You understand the arrangements here by which you are members of the faculty of the University just as much as you are Federal Demonstration Agents. We feel that it is a step in the right direction, this gathering together here to build up stronger work in the State, and to this end all of the trained men of the College are placed at your service. While the University was at your service before, you have now become a part of it, and are in a position where you can better use it than in the past.

We hope that a larger fund will be available for this work in the future, so that we can justly compensate every man for the good work that he does. My vision is that in the future we will have in every County a corps of men none of whom shall receive less than $1,200 per year, and the best $2,000 and over. I expect to see you men riding in automobiles from farm to farm, with a complete equipment

of all those things that make for better work, riding plows, spraying machines, and a lot of other things that need not be mentioned here; all of which will be supplied for your work, as a part of your equipment.

JUST A BEGINNING

This is new work. The amount of money put into it in the past is insignificant in comparison with the amount that will be put into it in a few years. The time is coming in the State of Florida when we will spend one hundred thousand dollars in this work. We must go right ahead and use every means possible towards being the most thoroughly equipped men. In these four days, filled with discussions by agents and members of the faculty, we will all become much better informed. We are planning to hold a school of instruction for two weeks next summer, when the best instructors along various lines will be brought to your service. This will give you a chance to become thoroughly equipped. It is not so much what you have learned, as whether or not you are students and investigators who will not stop until you get all the information that can be obtained. If you have the investigator's turn of mind that will not stop until you have solved your problem, there is no doubt but that you will be well equipped. If, on the other hand, you strike a problem but do not investigate it—are content to pass it by without investigation—you will soon find famers in your County that know more about the subject than you do. You must lead. That is why we have called this meeting, and why, from time to time, we are going to call other meetings. Keep note-books, and when a point is made, jot it down, think it over; and when you get back home sit down and write on a piece of paper all the points you have gathered at these meetings. It will help to fix them in your mind. We want you to be the best trained men in the County. We realize that many of you have not had the best opportunity for study. You are good farmers, and some of you have done a good deal of studying; but we want you all to become great students of agriculture that you may be of the greatest help to your people.

ADDRESS TO COUNTY AGENTS

P. H. Rolfs

I would like to emphasize the point Mr. Savely has made. Every Agricultural Agent should be the best informed man in his County. Now the difference between

Counties is so great that the best informed man in one of our cotton-growing counties, for instance, would find his knowledge of little or no value in a citrus-growing county; and conversely, the best informed man in a citrus-growing county would find his knowledge of small value to a cotton-growing community.

NEED OF SPECIALIZATION.

We need specialization, so that our men in the different Counties shall be specialists in what each County needs. Every County differs from every other County in a greater or less degree. The lands, climate and crops are all points to be borne in mind. Then there is another feature that we also have to bear in mind; that is the social surroundings in the County. You will find perhaps two Counties in Florida, almost or quite bordering one another, and in one the agriculture is far in advance of the agriculture in the adjoining County, so we must specialize and adapt ourselves to the particular County in which we are working. In one of the well-developed Counties where agriculture has been accentuated, where agriculture has been taught for a number of years, as in Washington County for example, where better corn production has been so ably taught by the West Florida Agricultural Society for twenty years, we find some of the best corn grown.

The demonstrator in any particular district has to keep a step in advance of the best farmers in his County.

LEADERS NEEDED

There are stages in the development of agriculture; and what is the best now, in ten years more would be so hopelessly behind as to be absolutely worthless. So the isolated farmer needs your best information. The work is progressing very rapidly; if you go to sleep for one year you will fall behind, but if you go to sleep for the next ten years you will be so far behind you would never catch up again. You must be at the head of the procession, but only just so far ahead as the conditions of your County will permit. Nearly every community has some one, two, or three individuals who have led the progress, who have done the whole work; and oftentimes the progress comes from a single person. Let us see if we cannot be prophets, leaders, inciting people in our own sections to excel in crop production. We can if we will. I know personally some who are doing just that thing; and while many of the County Agents are working under very serious handicaps, you should remember that

we are pioneers in this work, and the pioneers are the men who have to blaze the way. For that reason the work is made still harder when handicapped by small salary and various hindrances of that kind. We must have the vision of what the work is leading to if conducted along right lines, to keep our spirits up. Personally we may not suffer seriously by failing to correctly understand our true mission; but it is a terrible mistake for the County. So we need to keep in mind the vision of what we are doing, how we are doing it, and what the end will be.

ONE LEADING CROP HELPS ALL CROPS

I may use the same illustration that I have used so many times, that of better corn production in Florida. You will remember it has been said from time to time that the South was no place to produce corn. Statistics formerly showed the low average of 8 or 9 bushels to the acre. Yet when you come to look the country over for the largest number of bushels produced per acre, you find it in the South. In spite of that, most of the people of the United States have gotten the idea that the South is not adapted to corn-growing. The trouble is we have not put our brains into the growing of corn as we ought to have done. I know we are going to have trouble in applying brain power to corn production. We have a large number of negro farmers, and quite a number of indifferent white farmers who are content to produce less than 10 bushels per acre. But I expect to see conditions in Florida changed, so that everyone will see that the South has an advantage over the West in the production of corn.

The value of the corn crop in Florida has risen from something less than $4,000,000 in 1908, to $10,125,000 this year, being now second only to the citrus crop. I do not know but what the corn crop is worth more to the State of Florida than the citrus crop; the citrus crop is shipped out of the State, and the money comes back, some of it going into circulation locally, but much of it is lost to us. The corn crop, however, does not enter into commercial channels; it goes on to our tables, and the money enters our local circulation; it makes for better farm homes, better homes, better roads, and everything for local convenience. That is why I like to use it as an illustration. When we started the Farmer's Institute work, almost everybody said we ought to use the insignificant sum of $2,500 per year for the entire State, in teaching people how to grow all sorts of crops. But we held firmly to the idea of concentrating our

efforts on better corn production, and you know that when a farmer can produce 20 to 40 bushels of corn per acre, he has no trouble in producing a big crop of cotton. In talking with Mr. Meharg, we agreed that was the one thing to hammer on, the one point to keep our eyes on—a big corn crop. Now it has worked out to the point where it shows that our combined judgment was extremely well taken, that corn was the important thing and cotton would follow rapidly in its wake. We were not altogether determined by the relative value of the corn and cotton crops. We had before us the experience of Texas, where they were losing their cotton crop through the ravages of the boll weevil. We knew that we must prepare for this, and we were so well prepared that when the trouble struck the western part of the State there was no panic among the growers. They knew how to grow other crops. There was no panic among the bankers, because the banker had confidence in other crops. But I will not dwell further on this. I want later to dwell specifically on some of the problems that we need to study in detail.

In furtherance of what Dr. Murphree and Mr. Savely have said, we do not look upon you as visitors here, we want you to see the buildings, get all the information that you can and make use of it to the best advantage.

EDUCATING BOYS AND GIRLS FOR FARM LIFE

J. J. Vernon

(Corrected copy of this paper had not been received up to the time of going to press, May 10.)

DISCUSSION

C. H. Baker. I just want to say that I don't know when I have listened to anything more inspiring than Dean Vernon's talk. It had never occurred to me that this matter might be treated as a part of our school course of literary work which would appeal directly to the child and interest him in his own line of life; but I can see it now.

Another thing I have thought of a great deal, and that is when it comes to be a question of studies in school, we are often under misapprehension. I do not know of anything more mis-apprehended than mathematics. We are born, live and die by mathematics. That is too long a name and I hope it will be shortened some day. It is the same way in all the world, it takes the scientific worker years of effort to evolve a formula for something he has been working on; but the formula is simplicity itself, it is often only one or two words. (Illustration of a child in India performing quite complicated mathematical operations with the abacus.)

I want to take this opportunity to express my thanks to Prof. Vernon for what he has said here with regard to work in schools, I am inclined to take it up, and introduce it into my own County.

S. J. McCULLY. I heartily endorse all that Prof. Vernon has said toward the betterment of agricultural life. I feel that we will not be doing our whole duty as demonstrators of agricultural work if we do not go into the schools and get up and talk to the boys and girls about the organizing of Boys' Corn Clubs and Girls' Tomato Clubs. We must bring out the views of the teacher who teaches these things all the time. * * * I believe we have not done our full duty as Prof. Vernon says until we can go through the rural districts and find some very inviting homes. They would certainly appreciate it if all the Demonstration Agents would take a more active part in the work, as they are supposed to do later. We can set an example, and teach by example how they are to train the child to beautify the home and everything of that kind. It all has a tendency to aid agricultural work.

O. L. MIZELL. I appreciate very much the remarks Prof. Vernon made. I have heard him make similar remarks many times before, but they are always better and better. I believe in these things, and I believe it is our duty to carry the inspiration we get here to the homes of the people we visit. In my traveling around I try to follow up all the cow trails and byways, and see the people in their homes, and see their conditions and their disadvantages. When we do that, we can place ourselves somewhat in their position, imagine ourselves in their situation, and approach them in a different way than if we casually met them at home or on the highway. In that way we can gather the children with the father and mother and gradually broach all these ideas, bring them to believe in our ideas, and under it all is the idea of better conditions for the boys and girls. We must not neglect the education of the boys and girls. The parents are doing all they can, and if we can point the way to higher ideals the boys and girls will catch the spirit and their ideals will be greater. I appreciate the ideals given here. Let us carry them home and let us talk plainly to the teachers about them. I am persuaded that they do not know very much about it.

E. W. TURNER. I cannot say much more than has been said along this line; but it is my idea to take up all parts of the home, get the mothers interested, instruct the farmers how to take care of their machinery and keep it oiled, and in the future generation the farmers will be what they should be. We want to get the schools to teach agriculture. There are many little things you must take up within the home, and show them why they should do this, show them by the different surroundings where they can be benefited by confining their hogs and cattle.

T. Z. ATKESON. This problem is one that when you get to studying from the practical standpoint of the demonstration work, has many things connected with it. To my mind perhaps the thing that has done most is the Girls' Canning Clubs' work. As Dean Vernon so well phrased it, it is necessary to get in touch with the homes and understand their conditions. I do not know why it is, for my girls are all boys, but I think the girls especially appeal to parents. If we can put something like the tomato-club work before them that touches the daughter, we may get the attention of both parents. The tomato club work has the advantage of showing the people on the plantations where they have been losing money all these years in not utilizing the by-products of the farm. The canning-club work in Suwannee County

last year was a great success. The lady in charge has done a great work in that County. I think her work has done more toward the upbuilding of the rural conditions in Suwannee County than any other thing that could be done. This problem has to be approached with quite a good deal of caution by the average Demonstration Agent. My own experiences have been rather amusing in some cases, and rather unique in others. To give you one case in particular. I remember last summer a farmer in the County, who is fairly well educated as farmers go. He has a good common school education, owns his place, and has a very nice house. It is a log house, to be sure, but has a big porch and is fitted up well. I was taken with it, for it was an attractive place. I stayed there one day to dinner, and I certainly was sorry for his wife; all of the time we were at the table she was so embarassed. Her husband and I sat at the table, and she had a big limb of a peach tree with which she was doing the best she could to keep the flies off. I told him he ought to have the house screened. He said it cost too much. But after dinner we figured over the cost carefully and found he could buy all the materials necessary to screen the house entirely for $12. He said: "You know I would like to do it, and my wife she has been after me about it for a long time, but I haven't the money." So I said, "Well, I'll tell you what I'll do, if you say the word when I get back to Live Oak I will send you down all this stuff and you can pay me back next fall when you get your money." But he wouldn't do it. That man had a riding cultivator, but his wife had to cook on a $7.50 cook stove. This is a rather difficult matter to meet, and I think those are the things that will have to be evolved rather slowly in the majority of instances.

P. H. Rolfs. At first sight it seems as if the position taken by Prof. Vernon was rather far-fetched, but we are closer to it than we realize. People are ready for this. I remember our first Institute held at Greensboro. We talked to the children, and Mr. McQuarrie asked how many of the boys and girls wanted to be farmers. There were four little hands that went up, and they were feeble expressions at that. Two years later we asked the same question, and there were a great many hands that went up in the air. There were only a few who did not hold their hands up. That was the result of a small stimulus toward better farming. Dean Vernon has told us how great the advantage would be if only the problems in arithmetic were agricultural problems and if the reading lessons were agricutural subjects. We will find here and there (only a few it is true) some of the finest homes in the country for which I would trade in a minute some of the best in town. It is not an easy matter, but it is possible to have those fine homes. The moment we have one country house with a bathtub, it is only a year until we have a half dozen others. It is not because people do not want them. They may talk against it, and want to defend their old way; but when the way is shown we will find that improvement goes rapidly. The first step, we know, is that of getting more crops on the farm, so we can pay for these homes. We must have the money to begin with. The 1900 census showed the average farmer was making but $129 per year; and out of that he had to pay for schools, for ministers, etc. It is no wonder the farmers are living under the hard conditions. These conditions have shown great improvement during the decade ending 1910. Our work primarily and immediately concerns us with the parents, so we can get these ideals. Let us keep these ideals. If we have a low ideal we will never attain anything better. Put your mark

high. Formerly we were satisfied with nine bushels of corn. If we keep our ideal on nine bushels of corn, we will never get above it. We have already reached the fifteen bushel crop. If we keep our ideal on the little log school-house we will never get above that. If we have an ideal of a perfectly trained teacher, it makes no difference how great the obstacles, we will overcome them, and have a good school. Dr. Murphree referred to the school with the teacher on one end of the log and the child on the other. Some of the best lessons are taught by the teachers in this way.

I tell you, you have a great opportunity, greater than any of the rest of us, of bettering these interests in the country, and I think Dean Vernon has given us a great ideal.

H. E. SAVELY. I don't know how many of you men can make a public talk, but you are going to miss some wonderful opportunities of doing good if you don't make it a practice to speak in the little schoolhouse every time you go by and say something to the children. The best Demonstration Agents everywhere are the men who appreciate this fact, who make it a rule to stop at the schoolhouse and say a few words to the children and pass on. You have no idea the amount of good you can do if you will think out little lessons on corn or something else, and make it your rule never to pass the schoolhouse when it is in session without stopping and saying something. And when you get the sympathy of the children you will get the older folks too. As an illustration of what may come out of a chance conversation which is at the time seemingly unimportant, I want to tell you a little story about the late Dr. Seeman A. Knapp and a farmer he met one day. About fifteen years ago, Mr. Green, of ———————— Miss., came to Dr. Knapp to buy some hogs. Dr. Knapp had some stock to sell. While they were talking over the trade on stock, Dr. Knapp got to talking to Mr. Green and telling him how to prepare a better seed bed and grow better corn and garden crops. Mr. Green had not seen Dr. Knapp since, but one day I saw Mr. Green, and he said he was making two bales of cotton where he used to make only one. I asked him how he came to do it, and he said that 15 years before he met Dr. Knapp who was so enthusiastic, and talked to him about making a better seed bed, etc., and Mr. Green said "All these years I have been trying to do what he told me." So I said "I will write to you the next time Dr. Knapp comes to the State." I wrote to him and he came 150 miles to meet Dr. Knapp again. Now that man was a sort of leader in his community, and all that influence for betterment came out of a little conversation he had with Dr. Knapp fifteen years before. Don't lose an opportunity of going into the schools.

SUGGESTIONS TO AGENTS FOR THE PRACTICAL HANDLING OF THE BOYS' CORN CLUB WORK

C. K. MCQUARRIE

This movement carries one of the most useful lessons ever given to crop growers. Some critics have declared that the phenomenal yields secured by some of these boys were owing to their having picked the best soils available for their work, and that they devoted more time to their

crop than it is possible for the farmer to do under usual conditions; that they nominally lived in their patches; that they used excessive amounts of fertilizer. To all of which the reply can be given—What about it if they did? But on analysis we find, that in almost every case the soils were not picked; that the amounts of fertilizer used were not more than the average farmer could profitably use; and that if the boys devoted more time to their patches than in the orthodox way, it paid them to do so. Where the corn-club boy excels the ordinary father is in that he sets out to make a maximum yield; he sets a figure to be attained; he plants his seed thick enough to ensure that yield providing his soil is capable of producing it; and he stays with his crop, cultivating it and working it to the utmost, so as to attain the end in view. And it seems to me our agricultural education has all along been remiss in this line of teaching agriculture, in that they never set a maximum yield as being possible under certain soil conditions and certain closeness in planting the crop. They have been content to stick to the oft-repeated phrase of increasing the crop production. They did not have the nerve to set a figure and live up to it. It has been left to a few little boys to give an object lesson of what can be done when you start out to do it. The boys' work emphasizes the first and most essential aim of everyone who puts a seed into the ground—to give this seed every possible favorable soil condition, to make a maximum yield at harvest time. Over and above this, these boys have demonstrated to their fathers and all others concerned, that the increased yields have been made at reduced cost per bushel.

In the past history of the Corn-Club Work in the State, the most part of the work has been done through the County Superintendent of Schools, and by visits to schools where talks were made on the subject and the boys enrolled in number at one time. There was not much actual field work done among the boys by any of the Agents. This method has not proved very satisfactory, and has not resulted as well as was expected at its inception. The weak point has been that the personal touch, so requisite, was not continued; and the boy was left very much to his own initiative and resources. He was not accorded the influence of periodical visits and instruction, so necessary to his success. The boy on the farm is sometimes a difficult problem to handle, even to his parents; and where the Demonstration Agent pays his periodical visit, he has to use discretion as to how to get the boy to do as he wants. If he gets his name for enrollment right at home, he can do all the necessary initiat-

Fig. 2.—Boys' corn club member.

ing right there and then. If his name is enrolled with several others at a school or other meeting, the enthusiasm that generally occurs at meetings where a number join at one time, has waned by the time the Agent gets around, and he has to sometimes use diplomacy to get the boy started right. Sometimes the Agent will find names on the lists made at such meetings that are not desirable, that have no land suitable for the work, or not enough of it; and the Agent may have to do some weeding out. In this he must use some diplomacy so as not to cause any hard feelings that would hurt the work at some future time.

The land should be measured, to see that it is not too small or too large a patch. Seventy yards square is an acre, or 43500 square feet, and any multiple of this may be used. In planting a crop, the measurement should be from the outside water furrows. In the past some have measured the land from row to row, which is really more than an acre and was not a proper record.

In all the work with boys and girls, the personal touch is really what counts for success. The enthusiasm that the Agent shows in his periodic visits is reflected manyfold in the boys' successes, or otherwise. The necessity of a good seed-bed should be strongly emphasized, and also that the drainage is ample to prevent water standing on the surface during a rainy time. The proper fertilizer should be used and applied in the proper way; the quantity to be used should be determined by the mechanical condition of the soil and the depth of plowing when it was broken. A good rule to observe here would be 100 pounds per acre for every inch the land was broken. Where six hundred pounds per acre and upwards is used, it is recommended to broadcast it, and work it into the soil a few days before planting. In all these operations the Agent should be very explicit in his directions so as to ensure success. The personal touch is what counts, right at the time. Good seed should be procured that is suitable for the kind of soil in use.

PRIZES

The Agent should familiarize himself as early as possible with the number of prizes that will be available in his County. This will be an incentive to the boys to do their best. There is a difference of opinion as to whether these prizes should be in cash, live stock, implements, clothing, shoes, etc. We generally favor live stock, poultry or cash. The implements given generally do not appeal to the boys as much as a pig, a calf, or a chicken. If the prize is in cash,

send a check with the recommendation that he open a bank account with it, if he has not one already, which more boys have than some people have any idea of.

The Department at Washington is not in favor of the yearly trip to Washington given the boys that have the largest yields in the States, but recommend that it be used for a scholarship of a year's course in the Agricultural College. Giving short courses for the winners in the Counties is also a good way to reward the boys, and the Agent should at an early date get everything in line, so that he will be able to encourage the boys as much as possible.

THE GIRLS' CANNING CLUB

While the Agent has no direct charge of the girls' work as he has of the boys, still he is to help in any way he can by his personal attention as far as possible in the matter of soil treatment, spraying the plants, pruning, staking, and the other operations that belong to the work. He can, by cheerful encouragement, do wonders towards making the girls' work a success. The girls have just one-tenth of an acre, but on that they should grow a variety of crops, and practice a system of crop rotation for the season, because their crops are all short period crops; so that they should be encouraged to grow tomatoes, beans, okra, egg-plant, and peppers.

DISCUSSION

H. E. Savely suggested that two boys from each County should come to the Short Courses at the University. He also suggested that there should be uniformity in the different Counties in regard to the prize money. Big cash prizes are not desirable, as they are so discouraging to all but the prize winner.

Prof. Vernon recommended a large number of small prizes, making the first large enough to be attractive; $25 as a rule, is high enough. Scholarships are excellent prizes, but the money value of the scholarship should be made considerably higher than the cash prize. Then if the winner does not want the scholarship, he can of course have the smaller cash prize.

D. C. Geiger. In our County the County School Board have offered to duplicate any amount the Demonstration Agent can get up. I have a guarantee of about $100, and they will add as much more.

Some boys are handicapped in advance, from the fact that their land is not as good as that of some others. It is a good idea to give first, second, third, and fourth prizes so that all would be encouraged to try.

S. J. McCully spoke of lack of perseverance, citing the fact that of 141 boys enrolled in the corn clubs 100 dropped out; but in spite of that they had a good exhibition and had money enough to give each boy a little prize. * * * He said that the Painter Fertilizer Co. offered $25 and a gold watch for the largest yield of corn per

acre, but unfortunately the offer came rather late, as most of the corn was planted. He recommended that every boy should get something, if it was only $1. His method was to go from house to house and talk it over with the parents and the boy. The results were more certain, as the enthusiasm that could be gotten up by talking to the boys at the schoolhouse does not amount to very much. He makes it a rule never to let any one boy know what another is doing. The Demonstration Agent's boy must not be one of the contestants. It is an absolute rule that no relative should have anything to do with the measuring or weighing of the corn.

O. L. MIZELL. I thought after trying it one year that I could advise anyone, but now I am not so sure. There is just one point that I want to mention, and that is about raising the corn. I think the proper thing to do is to stress the fact that it is the raising of the corn, and not the winning of the prize that is the most important. If we stimulate every boy with the idea that there is nothing to it but the winning of the prize, there will be a great deal of disappointment. So let us keep the idea that the real thing is the raising of the corn, not the winning of the prize. Incidentally, let the boys know there is a prize coming, but do not make the prize the main idea.

G. W. BELSER had about 50 new names this year. He was in favor of giving every boy some kind of a prize if he grows his corn and reports to the County Fair. He did not think it a good idea to encourage the boy to grow the corn simply for the prize, but to work for good corn. Possibly some boy works as hard as the others but does not get anything because he did not make as much as the other fellow. He did not favor money prizes much, but rather something that the boy could appreciate. The outlook was encouraging. The chances this year were for better results.

I. E. SOAR. It is rather difficult at times to get everybody in good humor. It would be better to distribute prizes largely through the list of boys who complete the work and turn in results, but a large proportion of the prize money should go to the boys who make a good showing. I have made it a rule that every boy that completed the work and turned in the records should get at least one of the Boys' Corn Club Badges. Sometimes boys are very much interested, but in starting into the work do not seem to have suitable ground; and it seems to me that such boys ought to have something to encourage them. The having a badge seems to be a stimulation. I am particularly in favor of going to the homes and talking with the parents as well as the boys; boys whose parents have been interested are the ones who make the best showing in producing corn.

A. P. SPENCER. Referring to the scholarships, it has come to our attention that sometimes the scholarships come to rather small boys. Would it not be well to award the scholarships for work extending over one or two years? Of course the small boy is welcome, but the older one gets more out of it.

PROF. VERNON. It would be better for the individual boy; but on the other hand, I think we would reach a smaller number, unless we could work out a plan to get a large number up here on the basis of three or five years work. There is no question but what the boys (as many as we could get together of that kind) would do better, or that they would get more out of the short course. The great idea with the scholarships is to get as large a number of boys from as broad a field as possible. The boys come here, and when they go home they will talk about it, and possibly the boy or his father will write it up for the local paper, and everybody reads it and talks about it,

and pretty soon you have some boys coming on their own account. Dr. Murphree has ruled that no boy under 16 shall remain at night on the campus; but we have made arrangements through the different ministers to have them taken care of in town, and I believe in catching them just as young as you can. Of course, there is a limit. If we could have a bunch of eight-year-old boys I would just as soon have them; but the younger boys may not get as much as the older boys; though I know cases where a boy of 13 got more than a boy of 17. I have asked questions that a gray-haired man and others in the class could not answer, but this little fellow could answer. I think the boy I have in mind got more out of it than anyone else. I would not rule out a boy because he was young.

I think a longer course for two or three years work is a good idea.

H. E. Savely. Aside from the prizes, there are a lot of things you can do to create interest. One thing is an entertainment by some of the leading citizens of the County. This wakes the business men up. I know of one such an affair in Texas that was very successful. There the boys marched in procession with the Governor at the head, and afterwards had a banquet and some entertainment. It made the boys feel a sense of pride to belong to such an organization. It is up to you Agents to see in how many ways you can bring the boys in touch with the business people.

BREEDS AND MANAGEMENT OF SWINE

C. L. Willoughby

(Corrected address not received at time of going to press, May 10, 1914.)

DISCUSSION

D. R. McQuarrie. Peanuts for young pigs when fed alone have detrimental effect, do they not?

Prof. Willoughby. Yes, they are probably too highly nitrogenous in that stage of the pig's growth. It is best to feed them to larger animals. Do not feed any to young ones; bad effects may follow.

E. W. Turner. My experience has been that young pigs do not do so well when fed on peanuts. I turned some animals weighing seventy-five pounds on this crop and they were reduced to forty pounds or so. Say five or six months old is about the age they should be before being turned on peanuts. Hogs need certain things for their development. Wheat shorts and skim milk are good.

R. T. Kelley. What is the best breed of hogs?

Prof. Willoughby. There is more in the individual than in the breed. Berkshires are probably best. Duroc Jerseys second.

C. H. Baker. Is there any breed better adapted to sections of Florida?

Prof. Willoughby. Tamworths for South Florida and the Everglades seem to do best.

D. G. McQuagge. We lost some of the animals, and dissected them and found worms. We gave others potash and it helped them.

Prof. Willoughby. I would suggest turpentine for worms, ½ teaspoonful to a hog.

PRACTICAL METHODS OF HOG RAISING

W. E. Brown

One thing about the selection of breeds is that of the individual hog, and farmers will often buy blooded stock without knowing anything as to the history of their stock and their breeding qualities. It is important that they should know something about the history of the hogs they buy.

One of the best crops I know of for hogs, especially stock hogs, is velvet beans. We look upon beans as being great feed for cattle, beef cattle and such things, but few farmers realize the value for hogs, especially stock hogs. I have never seen the hogs injured from running on the bean fields, or sick from it, except from cholera or something of that kind. Supplement the beans in the winter with such crops as rye, oats, rape. By planting Yokohama, Chinese, and the old-fashioned velvet beans, the farmers can have nine months of pasture. I know of no cheaper thing to raise than the bean crop. It is a soil builder and a hog grower. In the spring we have cowpeas, peanuts, cassava, chufas, sweet potatoes, beggarweed, sorghum, Japanese cane, and, of course, corn. All these crops can be grown through the summer for the fall and winter pasture.

Of course these crops should be grown to furnish a rotation. That is one thing farmers should learn something about. These crops will then mature in such a way as to have a succession in feeding, one following another.

THE HOG LOT

The hog lot is another important adjunct to hog raising. This lot should be kept in a sanitary condition, with a dipping vat. The wallow should not be a mud hole, but should be of concrete with a good drain, so it may be thoroughly cleaned. Then it can be used as a dipping vat, and should be kept clean and free from vermin.

I might say four gallons of crude oil, one gallon of water, and one pound of hard soap will make a stock solution, with twenty gallons of water added for dipping hogs for vermin. The vat should be filled with water, and this oil poured on top. You can use kerosene in place of the crude oil if you desire.

I think hogs should have some shelter, especially brood sows with young pigs. More pigs die, I believe from exposure, than from any other cause. We think that because it

is warm, they do not need shelter; but they want good bedding and shelter from cold weather. This applies especially to young pigs.

DISCUSSION

E. W. TURNER. At what stage would you say to turn them on to Japanese cane?

J. D. BROWN. They get best results from Japanese cane chopped up, and it is a very good soiling crop.

C. H. BAKER. Which variety of bean would you begin with, as a rotation?

W. E. BROWN. The Yokohama will mature first.

R. T. KELLEY. Is it best to turn hogs into the velvet bean fields before the beans are ripe?

W. E. BROWN. If you feed velvet beans, peanuts and sweet potatoes, the hogs will not bother the beans much; but if you have a bean field with a pasture or something to run on they will eat the beans in a young stage. They do not eat so many beans, but if nothing else is given they will get fat and make a splendid growth.

D. C. GEIGER. Is the velvet bean a finishing crop?

W. E. BROWN. No, it is more a pasturing and growing crop, although you can fatten hogs for pork for the market or for home use; but there is nothing like peanuts for this.

H. E. SAVELY. How about the meat produced with peanuts?

W. E. BROWN. It is best to use some corn with the peanuts as a finishing crop.

I. E. SOAR. Use Japanese cane and such things and the quality is fine.

D. G. MCQUAGGE. How about turning under the peanuts and letting the hogs root for them?

W. E. BROWN. This is good, and they will go down after them; but many of the beans are lost in this way.

W. L. WATSON. What is your opinion of the Chinese as compared with the velvet and Yokohama beans?

W. E. BROWN. My observations are that the Chinese makes more grain than either of the others. They rot easily and shell out badly. But if you have hogs to eat them as they shatter, you do not lose so many as with cattle.

W. L. WATSON. How much earlier will they mature than the Florida velvet beans?

W. E. BROWN. Three weeks. I assumed as a basis in my talk that the Yokohamas be picked dry in September, being planted in May. The other beans matured almost at the same time, but put on more crops the first picking. I have picked the Chinese Velvet Beans three times, first in September, then in October when most of them were mature, and again later. They are fine feed for horses, mares, and colts. Nothing will keep the colt in better condition than velvet beans. When a mare gets fat from velvet beans, she is shaped like Santa Claus.

A. P. SPENCER. Did you pasture the Yokohamas?

W. E. BROWN. Yes, but there was some loss on account of their shattering in October, as they will soon rot on the ground.

Q. What do you consider the best way to plant beans in corn?

W. E. BROWN. That depends on whether you want to plant them for soil building or for pasture, and on the kind of land. On

ordinary upland pine soil you will probably need to plant the corn six or seven feet apart and the beans in the middle. That will be sufficient to cover the corn stalks and everything completely, on good land. You want to give more distance on very rich land. Plant the corn in five foot rows and then down in the middle plant the beans. If your ground is very rich so you cover too much of the corn with the beans, plant the corn in five foot rows, and for every six hills drop a hill of velvet beans. You can make twenty-five bushels of corn that will be covered up almost completely.

D. C. GEIGER. My Chinese beans do not shatter as do the Yokohamas.

W. E. BROWN. I did not get any Yokohamas, but the Chinese certainly did shatter. Some of the pods were very long and shattered a great deal. You could hear the pods all over the field cracking like guns. They made a very heavy crop of vegetation.

J. C. SMITH. Which is better, the Yokohama or the Florida Velvet Bean?

W. E. BROWN. I cannot tell. There are several things to be considered. One point is that the more roots in the ground, the more nitrogen you would suppose the roots could store up. On the other hand, the velvet bean covers the ground more completely and makes a better growth. Personally, I know little about the Yokohama bean except what I have said.

HOG CHOLERA SERUM

W. L. WATSON. What percentage of your hogs did you save in inoculation with serum?

W. E. BROWN. About 90 per cent. In some herds I would lose a good many, and in some cases it seemed they died more quickly from being inoculated. That probably was due to their already having the cholera, and being caught and worked with made the fever rise and caused them to die more quickly. Another important thing is to inoculate them when it should be done. The farmer who has the good results is the farmer who does it at the proper time. Then the next time there is cholera about fifteen miles or so off, the hogs should again be inoculated before the disease slips up on them. Another thing is that they try potash, Sloan's Liniment, and as a last resort they try inoculation too late, and blame the loss of their hogs to that. In talking to a man the other day from Floral Home, he stated that the hogs around Williston were dying off because they had been inoculated. That they never died before. He had a short memory. They did not believe in inoculation, and it was a hard matter to get them to do anything.

There is only one way to accomplish anything in this hog cholera matter, and that is to push it. I got a syringe, ordered the serum, and told the farmer to hold the animal firm and I did the work. They got started and I could not keep up with the work, there was so much of it. They wanted me to work on Sunday—could not wait until Monday for fear the hogs would die in the meantime. I got a syringe, and do not charge them anything and drive to their place with the serum, and tell them there is nothing for them to do but hold the hogs and I will do the work.

J. D. BROWN. Is it true that four weeks after inoculation the effect is gone; that three weeks is as long as it lasts? My understanding was that it was necessary only once. I think they become

immune after once having cholera, but it is only for twelve months, according to Dr. Dawson.

W. E. Brown. I would say, inoculate your hogs, and if they are sick inoculate them again, and keep inoculating them as long as they keep getting sick, for you cannot afford to have the hogs die after inoculating them. Your reputation is at stake.

EXPERIENCE IN PORK PRODUCTION

S. J. McCully

The production of pork and the cheapness of it depends largely on what kind of hog you propose to make pork of If you are going to make pork out of the common piney-woods rooter, and let him get his living in the woods as best he can, your pork will be very expensive, for, Mr. Chairman, it will take more food stuff to make pork out of a poor, measly, knotty pig than out of a good healthy hog. Now, to have your hogs healthy, you must care for them. Inasmuch as a hog must have some care and attention, I would advise to get a large, thrifty variety, such as the Hampshire, Poland China, Berkshire or the Duroc. Either of these varieties will give good results in pork production; and to make the results at the least expense, you must devise some way to keep the hogs healthy and growing. To keep them healthy you must rid them of all diseases, such as fleas, lice, and scale. This can be done by building a hog vat, and dipping the hogs in either Cresol or Bee Dee dip. When once you get your hogs in a healthy condition you can easily make them grow.

My experience in the production of pork is to have a variety of pastures as follows. In the winter and early spring let your hogs run on rye and rape. This is fine feed for hogs, and very cheap. In the latter part of the spring or early summer have a plot of Spanish peanuts and sorghum; hogs do exceedingly well on this kind of feed. The latter part of August put them on peanuts, velvet beans and cassava. This mixture will cause them to thrive and make better and firmer pork than if you feed only one thing. Again, it gives the farmer a good opportunity to dispose of his surplus at any time he wants to.

DISCUSSION

S. J. McCully. You can have your pork in market condition at any time. The trouble about the Marion County people (and other counties, for that matter) is that the majority of the farmers want to market their pork at the same time. Their feed is exhausted in the latter part of the fall, and they want to get rid of the animals. In September there is a good demand; but take it in November or Decem-

ber, you will find all our markets overstocked, and consequently, pork runs at about six or seven cents. But if you plant cassava and hold it until spring, and keep the hogs to the middle of March or in April, you can get ten cents. Mr. S. R. Pyle got ten cents f. o. b. for his pork last spring from the Tampa market. They are not so particular about the size. There was a time when a farmer could market only a certain sized hog. This condition has passed, and you can get rid of any sized hog at the proper season.

H. E. SAVELY. Do you advise keeping cassava over until the spring?

S. J. MCCULLY. Yes. Before I kill the hogs I run them on cassava alone. This hardens the meat and lard, and it is firm and hard. After smoking the meat I always dip it in hot water for fear of insects or something, then get a new box and salt the meat thoroughly, and put a layer of salt, and layer the meat on it, and barely cover it with salt. Then being weighed after four or five months, it will be about the same. This is not so after feeding peanuts. The meat drips and drips and almost drips itself away if it hangs up. The lard is oily, and some people even put it up in jugs. The same is true if hogs are put on chufas. The lard is almost as thin as water.

D. R. MCQUARRIE. How do you plant Cassava?

S. J. MCCULLY. Cut the stalks to about eight or ten inches long. Plant three feet in the drill. I plant in February and March.

Q. Will the roots keep through the winter, and how best?

S. J. MCCULLY. Let them stay in the ground, the hogs will dig them up themselves.

I. E. SOAR. Will Cassava keep if the ground is wet?

S. J .MCCULLY. We have had lots of rain and we have wet ground, but the cassava is keeping well. It is best, though, to plant it on a bed.

R. T. KELLEY. Will it keep better in the ground than out?

S. J. MCCULLY. Yes, it dries and rots out of the ground. Cassava is a cheap crop and a good crop.

J. C. SMITH. Do cattle eat it?

S. J. MCCULLY. Yes, and seem to like it well, although I do not know what its feeding value is.

W. L. WATSON. What is the average yield per acre?

S. J. MCCULLY. I do not know. I have about 25 or 30 hogs on a half acre of cassava, and it lasted for two or three months. I have had other cassava fields that did not last that long. I used a formula of 3-8-8 fertilizer on it. It will make good cassava.

O. O. SIMMONS. Where it is planted on level lands, do you want beds?

S. J. MCCULLY. Yes, it is good to make a bed and cover it only barely. Cassava is a peculiar thing. If it has grown a crop only three or four feet high, it may have a great many roots, and some land that produces good top crops does not produce good roots.

W. L. WATSON. What do you think of Bermuda grass pasture for hogs?

S. J. MCCULLY. It makes a good pasture, although some people are prejudiced against it. It all depends on the locality. I would have experimented with burr clover if I could have gotten the seed.

CUTTING AND CURING MEATS

T. Z. Atkeson

In growing hogs it is very necessary to have the proper hog to cure. It must be a good individual and the right shape; for the reason that a properly built hog cuts to better advantage for the higher priced and better cuts of meat than the ordinary razor-back hog. It is also necessary that the hog be in the proper condition to butcher. We all know the exclusively fed peanut hog will not make a good quality of pork; but so far as flavor is concerned, it is good. It has a flavor that I rather prefer; but the fact that it cannot be kept without considerable loss in weight and without losing its high qualities rapidly, is a detriment that cannot be overcome. My method over in Southern Alabama has been always to corn-feed hogs for three weeks, and for the last few days I have used some corn along with peanuts in the pasture. Our Dan Gray, (we still call him ours although he is now in North Carolina) has said that when hogs are fed at the rate of one pound of corn per day for each one hundred pounds of live weight, they will bring in about $3.75 for every 100 pounds of corn fed. You see there is no loss of money on this proposition.

BUTCHERING

You will have to have everything sharp when you butcher an animal. Have the knives sharp and ready before you begin to kill. I do not know your experience or method of killing. I have tried everything in this line from knocking the hog on the head to turning it on its back and sticking it with a knife till it bleeds to death (the method is recommended by the Department of Agriculture). I suppose you are all situated as I have been, on farms, and have to use negro labor for the most part, or incompetent white help. After seeing the negro turn a hog loose and let it run around over the pen until it finally drops dead, one never wants to kill another in that way. So I take a 22 caliber rifle and shoot the hog, then stick him with a knife, and he never gets up. Hogs should be killed in Florida in the afternoon. The one absolutely necessary thing in saving meat is to get the animal heat out as soon as possible. With as much hot weather as we have there is much danger of losing the meat. Kill the hog in the afternoon, split it apart and hang each part by itself; and then the next morning, if it is reasonably cool cut the carcass to pieces. The carcass can be put in the

smoke-house and allowed to stay over night, and by next morning it will be ready to cut up.

THE MAIN PARTS

There is some difficulty in cutting it up just right. It is absolutely necessary to have the knives sharp, as I have said before, but I repeat it for emphasis. All of them must be sharp. To do a nice piece of work with a smooth finish, everything must be in the best condition. Of course, we presuppose the head was cut off the night before and the carcass split. Now, where do you cut the head off? As close behind the ears as possible. Why? Because the shoulder is worth more than the head and we want as much shoulder as possible. The shoulder is not as choice a piece of meat as the side; so when you cut the shoulder out, cut as closely as possible so as to leave as much side as possible. Then when you get to the ham this is more valuable still, so you want to cut as much ham as possible. That is Scotch philosophy, is it not?

CUTTING THE SHOULDER

Now, take up the different cuts. The packers' cut is the best. The farmers' cut is much lower. This piece of bone is practically worthless and the best place to cut is above this. It is the place where maggots have the best chance to get in and ruin the meat, so I advise you to cut it high and throw the other part away. The only use you can make of this is to cook it with collards, and it always ruins the pot of collards. Going back to the sharp knife. This meat has another bone that was not shown in the drawing. Take your knife and cut around it smoothly, then turn your knife, making a smooth cut. Make the meat perfectly smooth, not only from the fact that it looks better, but it removes the danger of flies and insects getting a chance to work on that particular piece of meat.

There is another unique idea in cutting the shoulder. As I stated, the shoulder is one of the poorest cuts (next to the head, it is the poorest), and is really one of the hardest pieces to cure that I know of. It is of such shape that it is exceedingly hard to cure. The packing-house man is able to cut it much better than the farmer. He has the right tools and can do it in the right manner. Most of the hams, that is the picnic hams and lunch hams, are made of the shoulder. The shoulder blade stands up, and, in curing, the bone and meat draw apart; which is a bad proposition. In order to relieve that trouble I drop back a distance, and make a cut

through the whole, and cut the bone nice and smooth all the way through. This is all flabby meat, and you want to take a knife, and cut to where there is no flabbiness. Then cure this along with the hams and it is as good a ham and as good meat, if cut from a good large hog, and only in shape is there any difference. I put the lean loin part in with the sausage meat, and put the fat in the lard tub where it belongs.

THE BACON

In Live Oak the other day my wife bought breakfast bacon all fixed up in a box and very attractive, and she paid 40 cents a pound for it. That brings me to the point that every farmer can have his own breakfast bacon as good if care is used. The side is divided into three distinct strips by the farmer, but the packing house man makes about six cuts. With us it is more economical to make only three, the fat back, the bacon strip, and the belly. This fat back is pure lard. Then the loin is stripped out, and a cut made through to the lard, which is used for lard. The belly part is least desirable of all, and I have always dry-salted it and sold it to the negroes on the farm.

THE SUGAR-CURING PROCESS

Now, the sugar-curing process. It is strange how easy it is to put up something better than we have been doing, and do it cheaper. Farmers in Suwannee County, when I first began to talk of it, argued that it would be good for Alabama and Georgia, but not for Florida. There are many who have done as I have been describing it, with perfect success; and in order to test it out, I persuaded one particular farmer, who had gumption enough to do just as I told him, and he did it without any cold storage. One day he did get a scare, and asked me if he should use ice and how to do it. I did not think so, and told him if he wanted to do it to go ahead. We put a dry goods box on a table and bored holes, and put in a layer of meat and a layer of ice, and then in forty-eight hours we took it out, and the meat and ice were frozen together and only half the ice melted, which shows that there was no animal heat at all in the meat. The farmers used to take it for granted that brine-cured meat meant pickled meat. Meat cured in a brine solution will not lose the weight in curing in the briny solution that it will in dry salt. And we can add other things to the brine and make a better quality of meat. I suppose this formula that I will give you has been used for 200 years or more in the United

States. My great grandfather brought it from Virginia where it was used commonly in putting up the old Virginia hams. It has also been recommended in the Department Bulletins (Farmers' Bulletin 83 gives it), and it has certainly been used long enough to prove there is absolutely no doubt about its efficiency.

Get barrels or build vats (I prefer barrels, for they can be changed if necessary), pack the meat down after it has been spread out and allow to become thoroughly chilled. Pack it down as closely as possible, but don't jam it down, and put pieces in different positions. By rolling up the bacon strips, they can be wedged in so that the barrel will hold as much as possible. There is always room for plenty of the brine to cure the meat. Another thing is that the more meat there is, the less brine it takes to cover it. Use the following:

3 pints of syrup.
2 ounces of saltpeter.
8 pounds of salt.
4 gallons of water.

The saltpeter can be left out if you want to. It keeps the red in the lean portion of the meat, and improves its appearance, but not the quality. Nitrate of soda will work just as well. It is said this will cover about 100 pounds of meat but that depends to a large extent on the packing of meat in the barrel. The important thing is to put enough there to thoroughly cover the meat.

After the barrel is packed, you want to lay a weight on top to keep it from rising out of the brine. Leave it from five to eight weeks, according to difference in size of the pieces. It is better to separate if you have different sizes and lots of them to cure, and put the small pieces in one and large in another. For the smaller ones, leave the meat about five weeks; but for the hog weighing about 250 pounds leave it for ten weeks. At the end of this time, take the meat up and wash it well in slightly warm water, luke warm; and then hang it up and drain it, and then it is ready to smoke. This is not *pickling* meat. It is simply a process of *curing* it. The long time necessary is due to the fact that the solution will not be as strong as pure salt.

SMOKING MEAT.

Now use your imagination in looking at this chart. Here is the smoke house, and just outside is an old heater. Cut a hole through a sheet of tin and run the pipe through it and into the smoke house. Have the pipe long so it will

cool the smoke before it enters the house. In entering the house, let the pipe come in near the bottom. The reason for cooling the smoke is that there is not so much loss from dripping caused by heat.

DISCUSSION

Q. Do you use hot water in making your brine?

T. Z. ATKESON. No. I used to do so; but after trying it both ways I found the cold water served just as good as the hot water, so I stopped heating it.

I. E. SOAR. Do you change the brine?

T. Z. ATKESON. Not unless it happens to sour. I have never found it necessary to change it in my experience. You can, however, taste it several times, and you can tell if it is right. If the brine is coated with mold it does not mean that it is sour, but simply that particles of the meat and fat have come loose and to the top and have spoiled. You should skim this mold off whenever it appears. Before curing, I often sprinkle the floor with pine tops, and lay the meat on top, and sprinkle with salt. This draws a portion of the water out. Be sure that all the animal heat is out, for this is absolutely necessary; and then forty-eight hours or so after it has cooled pack it down.

H. E. SAVELY. Do you need to use ice in August?

T. Z. ATKESON. Yes, it would probably be necessary.

H. E. SAVELY. What steps would you take in killing a hog in August.

T. Z. ATKESON. I say, if possible put it in cold storage by all means. If this cannot be done, I would say to kill it and dress it late in the afternoon and then put it into the box of ice after about two hours, and after thoroughly chilling it put it immediately into this brine solution.

S. J. MCCULLY. In putting this up in this way does it go through the same process, and have the same flavor that ice would give it?

T. Z. ATKESON. If it does not have a much better flavor, send it to me and I will eat it. One thing that is especially attractive about this is that the process will make it better than anything else you could do. If you will just remember that you are putting it down in the salt and not in brine it will not worry you any longer. The ordinary way is to put it in salt, but the brine is much better.

Q. After killing the hog, how would it do to put it in cold water?

T. Z. ATKESON. Ice would be better, but it might be safe to use water.

W. L. WATSON. After cooling it some, put it in boiling water and cook it for an hour or so, and then put it in that solution and it is fine.

M. C. GARDNER. Did you ever try using liquid smoke?

T. Z. ATKESON. Yes, and it is fine. My reason is the climate. If I were back in Virginia (my birthplace) I would not use it; for conditions are ideal there in the fall and winter for curing meat. But here, with the unfavorable conditions, and the fact that our meat is peanut fed, or partly so, and pretty soft often, and when you take these things into consideration, and take into consideration that the average farmer simply hangs his meat about five feet or so high and then puts the smoking fire under it, I would then advise liquid smoke. This is supposed to be made of the active principle in the

hardwood smoke, so I do not see how there could be any bad effects from its use. Of course, it is a preservative, and a good one, but it will make a little extra skin on the meat.

S. J. McCULLY. How do you treat the hams after they have been smoked?

T. Z. ATKESON. This may sound curious to you, but I simply hang them up in the smoke house and let them stay there. I killed 52 head of hogs at one time here in Florida. The liquid smoke is an insecticide in a way, and protects the meat from bugs. My experience in putting meat away, that is in putting it down in anything or covering it with canvas, has been that the moisture in the atmosphere is almost sure to get in and cause the meat to spoil. In the smoke house, if there is any mold on the meat, I take a coarse sack and rub all the mold off and then use some liquid smoke, just a little, and hang the meat up again. Then the next time there is any necessity for this treatment, I repeat it.

B. F. WILLIAMSON. What is the loss in weight?

T. Z. ATKESON. It is estimated that under ordinary conditions it would be 15 to 25 per cent. in all, from beginning to end.

Q. Would it keep better if put in a barrel and lard poured over it?

T. Z. ATKESON. Yes, but it takes too much lard. Another way used in Alabama is to cover it with cotton-seed oil, which is cheap.

BACKBONE AND SPARE RIBS

That brings me to another problem, that is, the backbone and spare ribs. The first meal or so, you are just delighted with them; but when thirty or forty hogs are killed and a fellow tries to eat all the backbones and spare ribs, he has a big job and a tiresome one. This condition can be relieved. The backbones and spare ribs should not be salted, for there is so little meat that the chances are of their being over-salted. So you should have a tub, or keg, or barrel, and make a brine of ten pounds of salt and four gallons of water, and put them into this; and in ten months, if you wish to leave them this long, you can take a piece and soak it in boiling water and you will find the flavor is very little impaired, if at all. This will relieve the congested period, and at the same time you do not have to spend all your time trying to eat the backbones and spare ribs, but can eat the livers and such parts.

Q. Do chufas or peanuts make the hardest meats?

T. Z. ATKESON. I have not had experience with chufas. I do not know when they could be used except after December, during January or February. When it is taken into consideration that they should be planted early and grow all the year, I prefer not to use chufas. The chufas mature earlier than that, but during the fall and winter there are so many other things that can be grown cheaper and more rapidly, that I do not care to grow this crop, for it occupies the land too long.

HOG CHOLERA IN FLORIDA

DR. C. F. DAWSON

I believe this audience more truly represents the general agricultural interests of the States than any we often have the pleasure of meeting. This hog cholera is the most important disease that attacks hogs. I estimate that Florida

loses anywhere from $300,000 to $500,000 a year from hog cholera. This is only a fraction of the loss in other States, for our hogs are not worth so much as those in other States and our feeds are cheaper.

One year Kansas, alone, estimated her loss at $2,000,000. We lose about 20 per cent. of the hogs, and if worth

Fig. 3.—Demonstrating the use of hog cholera serum.

about $4.00 a head, our loss is between $300,000 and $500,000 from hog cholera. The disease has been in this State since 1840. Records in the Department of Agriculture (or what represented the Department at that time) prove that the disease was reported from Florida in 1840. This disease has been worked at from a scientific standpoint for many years.

SEARCH FOR THE CHOLERA GERM.

The most important work done in hog cholera in the whole world is being done by the Department of Agriculture. The work was done by Dr. Simons and his assistant, Dr. Smith, who reported in 1891 that they had discovered the cause, and described the germs which caused cholera, and this was thought true not only in America but in Europe, but there was always some doubt about it. They could grow cultures, and were able to kill hogs from it; but never were they able to have other well hogs catch the disease from the ones which they treated. Thus, it was never quite sure in their minds that Smith had discovered the hog cholera germ. They tried to produce the germ. That is, they tried giving the so-called vaccine to an animal and causing that animal to get a mild attack and in that way bring about immunity, but they were never able to produce this immunity, for they were never able to make a hog really immune. They also noticed that they could always produce the disease, although they were never able to produce a typical case by this injection. They could also produce it by feeding the hogs with the entrails of a dead hog, or by injecting the blood of a sick hog into a well one. It was also noticed that a hog that had had hog cholera by natural means and had recovered was immune. We know all hogs that have cholera do not die, and if they get well they are immune to the disease. In 1903 the real cause of cholera was discovered, and while we do not know much about it, it is a germ too small to be seen with the microscope, no matter how strong, and one that will pass through the finest clay filters we can make. This proves that it is a filterable virus. Yet the filtered part was capable of producing the disease. They then tried to produce a vaccine by attenuating blood either by heat or by subjecting the blood to the action of chemicals, with failures in every case. That brought them up to the position of using blood of hogs immune from cholera.

THE SERUM.

It was found that after a hog had recovered from an attack, its blood would protect others from the disease. That was the beginning of the serum treatment. It was found also that the blood should come from a hog with an extra degree of immunity. It is hard to get blood, for a 100 pound hog only gives one quart of blood. Horses, cattle, and other animals have been used, but it has been found that no animal will produce this serum but the hog. So the method is to

take a hog which has had hog cholera and recovered (but it must be one that has had the disease naturally) and inject into that hog large quantities of blood from a hog that is dying from hog cholera (and such an immune hog can stand quite a large injection). Then this blood is taken from the hog in quite a peculiar way; the blood vessels are so deeply seated that it is found the best way is to cut off pieces of the tail. This tail is chopped off and allowed to drip the blood into a basin and then the blood is beaten until there is no pulp left, and the blood does not clot, that is, it is blood from which the fibrin-forming elements have been taken. This bleeding is done three times, or as long as the hog has any tail left to cut. These three parts of blood are then mixed together as one bleeding and tested out on a hog.

In working with this disease you must use as virulent blood as you can find in order to produce the effect. The Government has ruled that all manufacturers of serum must be certified; so the hog cholera serum must be produced from places that have been inspected and that have a certain degree of cleanliness and paraphernalia so as to be able to produce the serum. They give some hogs, say 10 cubic centimeters, others 15 cc., and others 20 cc. This is given to two more hogs in order to test it.

The dosage of the hog cholera serum is generally 30 cubic centimeters. Some claim their serum is better than others; but the Government requires 20 cc. to a 100 pound hog, and 5 cc. for every fifty pounds additional weight.

REPORTS ON THE USE OF SERUM.

We have reports that the serum has done no good, but this is when being used under adverse circumstances. It is put in the hands of men who have no conception of what they are doing, and under those conditions they do not get as good results as are gotten in a laboratory. Still our reports have been very gratifying. We sent out blanks to 500 persons to get reports. It is necessary that we find if it is any good, for it is very expensive. About 95 per cent. of our reports were favorable to the use of serum. I was surprised, for I expected that probably 50 per cent. would say that it was no good. The cause of the failure may be that the fellow using it does not use it in the right way. The manufacturers now find that with the Government after them, they must send out properly manufactured serum. There is nothing being made that gives better chances for fraud than does hog cholera serum. Men have gone to the slaughter house and collected blood and bottled it and sold

it for serum, for it looks like serum. But now the Government rules that the blood shall be tested and the place all right before it can be used.

DISEASES SOMETIMES MISTAKEN FOR HOG CHOLERA.

The disease may not be hog cholera. We have other diseases. One of them is a very serious one. The other day a man from Indianapolis told me that they had spent $60,000 in treating hogs and then found on opening them that they had intestinal worms. This does not cause the disease, but it bores a hole through the bowels of the animal and causes peritonitis and death. Such a hog shows inflammation and redness of the bowels on the outside. Another disease which occurs in young animals, is lung-worm disease. It is often lung worm in a hog and not cholera. If you will cut open the hog, you will find these worms. Then cholera may have run too long. The serum, to be of benefit to the hog, must be used early; so if a hog has been running sick for three or four days or a week, with back arched up, giving evidence of the disease, the chances are that the serum will not do any good. Tuberculosis is another disease, and one that hogs take readily, more quickly than people. They are especially liable to take it when they run with cattle. It does not spread in cattle and does not trouble them much. Swill containing soap, from hotels, will, when given to hogs, cause death that is often supposed to be cholera.

The life of a hog is short, so it does not catch diseases which it might if its life were longer.

SYMPTOMS OF CHOLERA.

There is a loss of appetite, which is a symptom. The hog will begin to get into corners, matter will form in the eyes, and there will be diarrhoea and constipation. Constipation will cause death quicker than diarrhoea. You will no doubt have noticed these symptoms. In the acute form, the hogs die quickly, only living a day or two; and often you will think they must have been poisoned. They have, of course, had fever for a week or two. In the chronic form these symptoms are drawn out longer. In post-mortem examinations, ulcers on the bowels and kidneys are found. Those ulcers will break and cause blood spots. Some cases will show the kidney looking like a turkey egg. With the heart this is the same. In these cases we call it the acute form. Death is rapid, and you will hardly believe these hogs have cholera. In the chronic form, you have pneumonia accompanying the disease. This used to be called swine

plague. They have lung pressure, and on opening the valves, you will find a lacerated condition. In chronic cases the serum does not do any good. It does best when used early; when the animals in a herd first begin to die. The prevention of the disease, outside of the use of serum, is sanitation.

CARRIERS OF CHOLERA.

It is not right to allow the dead body to lie around. Buzzards carry the disease from place to place. We made an experiment feeding a buzzard on a hog that had died. We collected the feces and mixed that with condensed milk and fed to young pigs. That same food was sent to H. K. Mulford, a Philadelphia Company, and it killed every pig they used it on, and it proved we were working on virulent stock. That, of course, has nothing to do with the carrying of the hog cholera on the feet. I think the buzzard is one of the great ways the disease is carried. That explains why it is on one farm, skips another, and appears on a third.

It is now believed that the man treating hog cholera carries it on his feet, and the same is true of dogs carrying virus on the feet. Lice, no doubt, carry the disease by inoculation. I believe lice probably inoculate a hog. All show hogs can carry it; and while inoculation will not prevent them from carrying it, it will prevent the disease from developing while they are being exhibited.

IMMUNIZING HOGS

The injection with serum and a certain amount of virus is known as the simultaneous method. The serum is the only one we are sending out. This consists in putting the serum into the blood. We always recommend that the serum be injected under the skin. This is the safest way. If you have an abscess produced in the meat, you will have a bad rotten spot in the ham. The serum simultaneous method is the right one, I think; for the serum treatment is simply a kind of makeshift from a scientific standpoint, because it has so many drawbacks. You cannot cure a hog with it. You cannot entirely prevent the disease, and you simply have to wait for the disease to appear among the hogs to use the serum, and three weeks is as long as the treatment will hold; from a scientific standpoint, this is a makeshift.

The true thing is to have the virus injected at the same time with the serum. That has its drawbacks. It is all right and good for the man who double treats his animals; but for the other man who does not, it is one of the worst things,

for these treated animals become carriers of the disease, and the hog that has not been double treated is almost sure to develop the cholera. I do not think the disease has become less prevalent since we have been inoculating with serum, and I think the spread has been due largely to the double vaccination. This is, however, the only true scientific way of treating. As long as everyone does not use it, it will spread hog cholera; but if everyone would use this treatment we would have no hog cholera at all. If every hog were double vaccinated a few days after being born, hog cholera would soon cease to exist.

Now, something as to the duration of immunity. It is supposed that this immunity lasts for about the life of a hog, but I would say use it about once a year on the brooders. One of the important things connected with the work is the injection of the serum.

We have had a hard time to get the druggists in Jacksonville (and I suppose it is the same elsewhere) to carry the right kind of syringe in stock. This syringe must have rubber fittings so it can be put away in good order. The syringe we are now sending out is such a one, and the reason we want an expanding and contracting plunger, is that when you put the syringe away you do not want the plunger to get smaller and harden. The cost of this instrument is $4.50. Now this syringe should be disinfected each time it is used with as much as 50 per cent. carbolic acid, alcohol made rather weak, or whiskey. Weak alcohol is probably better. The needle should be kept as sharp as possible.

Of course, the animal should be disinfected at the place of injection; for the abscess that is often caused is not caused by the serum, but by germs carried in on the point of the needle. I have sometimes, when working single-handed, dipped the point of the needle into carbolic acid when applying the serum.

The serum is distributed by the State Board of Health under certain rulings. It is one of the most expensive things the Board has undertaken—it is the most expensive in the way of distributing a remedy or medicine. We always put literature in with the package. One is a report blank to be used at the end of a month. This we made out wrong at first, but now we hope that we are sending out intelligent reports. The application blank is simply a statement of what you want, telling us the weight of your hogs and how many head you wish to treat. We often get telegrams like this: "Send us hog cholera vaccine." We do not know how much and we cannot send it. Now, if a man gets in a hurry

and telephones us or even sends a telegram, stating what we need to know, we can then send it to him without delay. We sometimes have trouble in knowing how to send it, if a man lives in a little town and does not tell us his express office. We have agents in the different Counties who are authorized to do this work of injecting.

Let me emphasize the point that hogs given the double treatment must be kept away from hogs that have not been given the double treatment, or you will spread the trouble. For instance, if you double vaccinate your animals, do not let them run with your neighbors' hogs for at least thirty days. By that time the germs will no longer be passing from the animals.

DISCUSSION.

Q. How long is a territory dangerous? Does immunity last any longer in double treatment?

DR. DAWSON. Yes, it lasts possibly a year. You know that you have gotten the virus in him. Personally, I think that every hog in an outbreak of hog cholera, gets the disease. Otherwise, we would not get such good results from the use of the serum. Of course the virus dies out after a time. If vaccination could go on, it would be only a short time until the disease would be eliminated.

Q. Does the double vaccination produce the same results, practically, as the natural disease in the animal?

DR. DAWSON. Yes. But it is, of course, supposed that a natural thing will do the best work. Now, an instance of this three weeks business—one of our agents treated a man's hogs near Starke and advised him to put a sick hog with them. Of course, the Agent meant to do it at once when the serum was injected; but, instead, the man waited for three weeks and he lost many of his hogs.

A. W. TURNER. When the hogs have chills, what does it indicate?

DR. DAWSON. It is probably cholera. To prevent lung worms change the pasture and burn the bodies of hogs that have died with it. A single infection does little harm, but continued reinfection does the work. One worm in the throat of a chicken does little harm, but if there are many, the chicken does not have time to eat, it is so busy breathing, and it dies of starvation. The thorn-headed worm bores a hole in the bowels and brings about a fatal disease, peritonitis. Lung worms cause fits and convulsions.

B. F. WILLIAMSON. Are there any statistics that hogs given the double treatment for cholera have contracted cholera at a later time and have died?

DR. DAWSON. I do not know exactly. The hog is a peculiar animal and lives only about a year. I do not know of any available statistics along this line. Re-vaccination of brooders is advised each year. The reason is that there seems to be a difference of opinion. In South Carolina they claim a hog is immune for life.

I. E. SOAR. Do you advise re-vaccination each year?

DR. DAWSON. Yes, if the animals are very valuable. The suckling pigs are more or less immune if their mother has been vaccinated. There are some principles given off, apparently, in the mother's milk that keeps the pigs immune while suckling, but after that they become

susceptible. The more serum you can use, the greater the degree of immunizing you do. We give five additional cubic centimeters for each additional fifty pounds live weight in order to produce immunity. Another way would be to inject the blood into the abdominal cavity. This is rather dangerous, as it may produce peritonitis. It takes a 100 pound hog to produce enough blood to immunize 100 pounds of blood. It costs us anywhere from $15 to $20 a quart, according to the manufacturer. When we see one firm building a hospital at a cost of $50,000, this hospital to be used for hogs, we realize the importance of the work that is being done. They keep three men doing nothing else but continually bleeding tails. These hospitals are built, so far as cleanliness and equipment are concerned, as human hospitals.

TICK ERADICATION IN FLORIDA

DR. C. F. DAWSON

I always object to the title usually given to my subject—"Tick Eradication," because, as you all know, we are not yet eradicating the tick in Florida. What we are doing here is simply working toward it, and man being the kind of animal he is, we have to carry on educational work to educate him to the idea of how important it is to get rid of the tick. The tick probably came to Florida the first of the United States, because Florida was first settled at St. Augustine in 1565, and it is entirely probable that the ticks came here on the first cattle shipped in by the Spaniards, and since then we have always had more or less trouble with them.

DISTRIBUTION AND NAME.

The infested area is limited only by the amount of cold; its northern limit is placed by cold entirely. Wherever the cattle go, they carry the tick; and if it drops to the ground where it is cold enough to kill it before it lays its eggs the infestation is checked. The disease caused by ticks is known as Texas Fever or tick fever. The name Texas fever does not mean anything, except that it conveys to our minds the diseased condition which was first noticed in cattle driven north from Texas; it might as well have been called Mexican fever, or Florida fever. Tick fever is much the better term, because it means something. It is also called bloody murrain, old town pasture fever, etc.

There are eight species of tick, but only one that causes fever. The tick is sometimes found on horses and mules, but when raised on horses or mules it loses its power of causing fever. However, it is most frequently found on cattle, and it is this common cow tick that has the power of producing fever.

CAUSE AND SYMPTOMS.

The fever is not caused by the tick itself, but by a germ which the tick harbors. This germ gets into the blood, and destroy the red corpuscles about as malaria does in man, and produces anaemia. The amount of infestation by this parasite determines the severity of the fever. There are two forms, the acute and the chronic. The acute is that form which attacks cattle brought to the country for the first time and from that originated the idea of acclimation fever. But there is nothing in that theory. When you ship an animal from above the quarantine line, it becomes sick in its acute form after its arrival here, and may even die, with a high fever and all its accompanying symptoms. One of the principal symptoms is bloody urine, from which we get the name that is sometimes used. The chronic form is what we see mostly. Every cow in Florida has chronic tick fever all the time. It is not a question of getting rid of the tick. There is not an animal in Florida that is not suffering from the fever. After several infections they acquire tolerance of it, so that they look in a fair state of health; but when they get into a poor condition from short pasture, then you see the scrawny cattle.

The man who discovered the tick germ is Theobald Smith, the same man who discovered hog cholera, but his work on Texas Fever has not been doubted. Every one who has studied it has come to the same conclusion. If you examine a tick under a microscope, the germ appears of pin point size. Smith made his announcement of this discovery in 1892.

THE TICK CRUSADE.

(Attention was here called to the chart showing the tick infested States and the area which has been freed from the tick, North Carolina being the pioneer in the crusade which started in 1906.) The work was begun by Cooper Curtice, who started with $700 from the State and began by rubbing an animal with oil. He was considered a crank, but he finally demonstrated that one farm could be rid of ticks, and if one farm, why not the whole county, and if a county, why not the whole State. The money of the National Government is not spent on building vats, but in inspecting lands and cattle. When a County applies for removal of quarantine restrictions, it must be inspected by a Government Inspector, and that costs a good deal of money.

(Dr. Dawson then called attention to the shaded area

below the black line representing the States that have been cleaned up.)

HOW TO RID CATTLE OF TICKS

Now we have several methods of ridding cattle. You do not have to build dipping vats, but that of course, is very much to be advised in Florida and in certain parts of Georgia. Where a farmer has only one or two head of cattle, he can use a spray; we have one authorized by the Government. Where you have only one cow, you can hand-pick the ticks, and you will find that it is only a short time until that cow is entirely free from ticks. Chickens are sometimes a great help in that line, as they will pick ticks off from the animal and also from the ground where they have dropped; and every time a large female tick is killed, it is not only that one, but stands for hundreds of thousands of others.

THE DIPPING VAT.

The best method for Florida is the dipping vat. There are 33 in the State. They are generally made of cement, though they may be made of wood; but it is an awful job to keep the wooden ones from leaking.

There is also a steel tank on the market. It costs about $100, but the firm that is putting them out requires the people to use their dipping solution. No matter how you do it, what you want is to get the ticks killed. I have not seen these vats, but the man who told me said they would be here soon. They are to be handled by the Painter Co. They weigh 800 pounds each, and they are easy to set up. In many places it is almost impossible to build a concrete vat because the water table is so high.

DIPPING VATS IN FLORIDA (1913)

Alachua	Bock & McDonald, Daysville, Feb.
	A. L. Jackson, Gainesville, Mch.
	P. G. Ramsey, Wacahoota, Apr.
	John R. Zetrouer, Rochelle, May.
	A. B. Zetrouer, Rochelle, May.
	W. B. Phifer, Rochelle, June.
	C. F. Harrison, Clyatt's Station, July.
	College of Agriculture, Gainesville, Dec.
Baker	C. F. Barber, Macclenny, Feb.
	R. Rooney, Baxter, Oct.
Duval	Riverside Dairy Co. (J. C. B. DeBevoise) Mch.
Escambia	So. States Lumber Co. (P. K. Yonge, Mgr) Muscogee, Nov.
Gadsden	State Insane Asylum (W. W. Trammel, Supt.) Chattahoochee, Nov.

Holmes	W. A. Sessoms, Bonifay, Nov.
Hillsboro	Aug. Van Epoel, Tampa, Aug.
Hamilton	H. S. McCallum, Winn, Oct.
Jackson	J. W. Hinson, Cottondale, June.
Lake	W. R. Matthews, Leesburg, Oct.
	Wm. Edwards (Mgr. Wenalden Co.) Zellwood.
Leon	Leon Co. Live Stock Club.
	A. P. McCaskill, Tallahassee, April.
Marion	S. H. Gaitskill, McIntosh, Apr.
	J. R. Williams, Citra, May.
	Jack Camp, Ocala, July.
Osceola	E. L. Lesley, Kissimmee, May.
	H. T. Bass, Southport, Oct.
Putnam	C. L. Whitehead, Hollister, Sept.
Pasco	Kirby Williams, Dade City, Nov.
	C. A. Croft, Trilby, July.
Seminole	J. C. Cameron, Geneva, Nov.
Suwannee	Frank Drew, Wilmarth, June.
St. Johns	F. E. Bugbee, Hastings, Aug.
	Total 33.

Now, some time ago I sent a lot of circular letters to the vat owners of the State, as we wanted to publish the result of a year's use and their ideas as to the value of the vat. It is only a year on the 22nd of February since the opening of the first vat. All have been built by private enterprise. We may pay for the vat at the University, but that is the only one, as this is against the principles of the State Board of Health.

(Dr. Dawson read extracts from numerous letters that he had received.)

Of course the question of vat construction in Florida is not the same as in other States, as conditions are different here, and probably the vats will cost more here than they do in some States. Some States do not have to haul the stones; and here, too, we have water to contend with. Mr. Barber's vat cost about $75, and that was about the cheapest one in the State. The one at Hastings did not cost much more, and I think none of the others cost more than $300; but it is mainly a question of the supply of material. $100 is very reasonable.

DIPPING MAKES IT POSSIBLE TO SHIP CATTLE.

There are about 31,000 less cattle at the end of 1913 than at the beginning of the year; but on the other hand, they have greatly increased in money value; so, while we have lost in numbers of cattle, we have gained in worth. This agitation of the tick question may have been one of the things which directed the attention of cattle buyers to the fact that we had cattle in Florida. We have about 1,000,000

head; and while some people think we have sold too many, I do not think we have. If we had a million, we could spare one in every hundred. That is what we raise them for, and if people will come down here and pay us twice as much as they ever paid before, I do not think we have much to say about the question of selling. Of course you do not want to sell off your best breeding stock, and the buyer wants to get the best he can for his money; but this is a question between the buyer and the seller. The dipping vat has made it possible for us to ship out cattle at any season of the year. One great reason for the demand for Florida cattle is the scarcity of feeding cattle, and as soon as the stock farmers in the Middle West get re-stocked, they are not going to buy our piney woods cows in the shape they are now. But the piney woods cows well fed on the western pasture and bred to a good thoroughbred bull, would give a remarkable cross at once.

At present you can ship out of Florida under certain conditions, without dipping; but not out of the quarantined region without being dipped twice. So it is advisable for a man who is going to ship a carload to dip his cattle once here, and then they will be dipped again at Atlanta, practically on arrival, under Government inspection. So the owner will have no big board bill to pay, for the board bill for a carload of cattle for a few days is quite an expense. It has been recommended that all shipments of cattle be stopped unless they have been dipped. This will stimulate the building of vats. My plan is to get every vat built that we possibly can without reference to tick eradication; and then when people are educated to the point where they see the value of the dipping, there will not be any difficulty in getting the few remaining people to take up the work. When a man sees he is being benefited, he becomes most enthusiastic about tick eradication.

(Here Dr. Dawson called attention to a diagram of a dipping vat, explaining its construction fully.)

DIPPING SOLUTION.

Five or six dollars worth of material will make 1,500 gallons of the dipping solution, and it will last a long time, according to the number of times it is used. The amount of rain water that may get in, or the evaporation that takes place, are conditions that can all be determined by the man who owns the vat, and we have rules to help him to determine how much water should be added for the evaporation. It is against the law to pour any poisonous substance on to

land where it may find its way into a stream, but the poison can be neutralized by the addition of lime and arsenite of lime will fall to the bottom as a magma, and can then be shovelled out. Do not pour the poison on the land, as it may find its way into some stream.

The State Board of Health has a chemical method for determining how strong the solution should be. The ideal way would be to try it on one animal and then wait a few days and see if the ticks are dead. The tick does not die just at first; but the arsenic will give the little pests a death blow, and even if the eggs hatch out, they are weak and do not reproduce themselves.

The dipping vat pays its cost even if you do not improve the cattle, because it causes the animal to take on more flesh. Of course it does not remove the disease parasites from the blood; but it removes the cause, and the animal begins to recover. All this depends upon the continuation of the introduction of the parasite. As in the case of the hook worm, if you get one on you it does not harm you materially; but if you keep on introducing the parasites, it gets the person or the animal into a diseased condition.

ADVANTAGE OF DIPPING.

This parasite can live in the blood of an animal for fourteen years. We had an animal at Washington for thirteen years, which died finally of tuberculosis, whose blood, when injected into any other animal would give it tick fever. So by dipping the cattle they begin to improve immediately. They take on one or two hundred pounds of flesh, according to the condition of the animal. I have a photograph of an animal in Mississippi that took on 450 pounds weight in four months, or over four pounds a day. This shows the vast improvement that took place in this Mississippi steer, fed under the same conditions and living in the same place.

The small cost of dipping will pay for itself in the increase of meat alone, and the increased cost of hides alone would pay for all the money spent in the United States for tick eradication. I heard a man say he never paid half as much for southern hides as he did for northern hides because they were eaten up by ticks. Another man said he preferred the southern to the northern or western hides because of their better texture, but could not use them for they were so scarred by ticks. Of course those hides that had been bitten up by ticks, even though they were eradicated afterward, would not be very valuable. There could be no great improvement in that generation. It

would come in the young cattle that had never been attacked by the ticks.

Another thing will be the desire on the part of the farmer to improve his herd. The first thing he will think about, naturally, is the acquirement of a thoroughbred bull. I think it pays to sell off a half dozen cows to get a good bull, and you cannot get better cattle without tick eradication and a good purebred bull.

I know a man within nine miles of here who has as good a herd as any in the State. Another method of eradication of ticks is by pasture rotation. This man does that. In his case, of course, if he had a very ticky place, his idea would have to be to control the ticks, not eradicate them.

Four and a half million dollars worth of milk is annually lost on account of ticks, in the loss of animals brought here, by the abortion of animals, and the death of infested cattle. But the loss of milk alone is what the figures refer to.

Another thing is the increased desire on the part of boys and girls to remain on the farm. At present there is very little in the farm home to attract young people, but I think tick eradication would be one of the things to increase the desire of the young people to remain on the farm. They will take pride in raising good cattle as they do now in raising corn and hogs. I hope Prof. Willoughby will start a calf club before long. The first public movement was started here at the University when we formed the Live Stock Association in December, 1912. So the whole subject is only about one year old here in Florida; but I think now there are very few people in the State who do not know something about tick eradication. We have gone at it through the newspapers and lecturers. The Farmers' Institutes have had something to say about it as they have gone about the State.

STATE LAW.

We have a law on the Statute Book, "The Tick Eradication Law," which allows the State Board of Health to spend such money as they deem advisable from the half mill tax on every dollar in the State. There have also been donations made by individuals to carry on the work * * * * * How this law is going to be carried out, I am unable to say at present. The State Board of Health will meet again in a few days, and we expect the matter will be taken up; but just how much more money they will be willing to spend I do not know.

In the past we have furnished speakers to meetings. The Government had a man who knew how to construct the vats, and he has gone about giving instructions free. We have not only to teach the cow man what he ought to do, but some other people. * * * * *

I can hardly see how any man could say anything against tick eradication after he sees the benefits to be gotten out of that work. I am most interested in the disease side of it, and others deal with the financial side; but the main purpose of the whole question of tick eradication is teaching the people the important fact that they must eradicate the tick.

DISCUSSION.

H. E. SAVELY. Dr. Dawson has pointed out that this is a campaign against the tick. You will have an opportunity to talk with hundreds of men in your Counties during the next twelve months, and if you understand it, you can do a great campaign work in educating the people up to this thing; and by and by, if they do in Florida as in other States, they will appropriate the money and compel those other fellows to take the proper steps. But if you have not done the work beforehand, you will find it hard. In Mississippi last year they had a lot of fellows who made it their business to dynamite the vats and hinder the work all they could, until a Government officer had to be sent there to clean them out. It is a whole lot better for you to educate your people and make them see the value of this work so that they will do it willingly. You can do another thing, you can find the men who have the money and the interest to be willing and able to build a vat. I think it will look bad for the county for you to come here next time without being able to report at least one vat in the County. If you can get more, so much better. Now when you go home, set about finding some one man who is willing to build a vat.

I knew of an agent in Mississippi who was convinced of the benefit of the dipping vat, but could not get any of his neighbors to have much faith in it. So he set to work to construct one himself on his own place. He built it off in the bushes and so no one knew he had one there till it was ready for use. Then he had a big barbecue and invited every one to come, telling them he had a surprise there to show them. And the surprise was the demonstration of the dipping vat. Some of the old farmers were very much opposed to the idea, and declared loudly that they would never allow any such thing to be done to their cattle. But he persisted and dipped what he could; and as a result there are now 21 vats in that County, and some of the very men who were loudest in their statements that they would not allow their cattle to be dipped, are now driving their cattle 8 miles to have them dipped in his vat.

PROF. WILLOUGHBY. Did he charge anything for it?

H. E. SAVELY. Just enough to cover the actual cost, perhaps a nickel or 10c a head. This man was J. G. Harrold, of Clark County, if any of you want to correspond with him.

A. W. TURNER. In case we wanted to build a community vat, how should we go to work?

A. We have one in this community. Each one signed up for

what he would give, and any information can be gotten from the State Board of Health.

C. H. BAKER. We had a very successful demonstration in our County. The vat belonged to Mr. Wm. Edwards of Zellwood, but the cattle came from Orange County. We had a Farmers' Institute there, and Mr. Spencer was present. Mr. Edwards, who is a very enterprising man, persuaded the people he represents to build the vat at their own expense for the purpose of demonstrating to the people in the County who had large numbers of cattle. They sent and got the solution, and we had a very interesting demonstration. One of the oldest men there said he knew the ticks came out from the inside of the cattle. This shows how necessary it is to go at it diplomatically.

DR. DAWSON. The 1st of April we shall have somebody to send around who knows just how to build the vats. Now if anyone wants to build a vat about the 1st of April we shall have a man who can superintend it free of charge.

CROP ROTATION

H. E. SAVELY

THE VALUE OF A SYSTEMATIC CROP ROTATION TO THE COTTON FARMER

The value and necessity of following a systematic crop rotation in order to maintain soil fertility and ensure the largest yield of crops per acre, has long been known in the older agricultural regions of the world. Land leases in European countries usually specify what the crop rotation is to be. In some sections of the United States, farmers fully appreciate and have adopted systematic crop rotations.

Only a very small percentage of the farmers in the cotton States have adopted any system of crop rotation up to this time. Interest, however, is growing rapidly among the cotton farmers in favor of adopting crop rotation. The rapid depletion of the soil under the one crop system has emphasized the necessity of this.

SOME ADVANTAGES OF A CROP ROTATION.

1. It provides for the growing of legumes (nitrogen-gathering crops), which furnish an economic supply of nitrogen, and it reduces to the minimum the necessity of purchasing commercial forms of nitrogen.

2. It keeps a growing crop on the land most of the time, which checks leaching and the erosion of the soil.

3. Shallow rooting crops are alternated with deep rooting crops, and the plant food is taken from different portions and layers of the soil.

4. It reduces to the minimum the possibility of damage from insect pests and crop diseases.

5. It supplies the soil with humus (decayed vegetable matter) which increases the water-holding power of the soil and helps to ensure against the damage of the crop by drouth.

6. It enables the farmer to systematize his plans and economize in labor.

IMPORTANT POINTS TO CONSIDER WHEN PLANTING A CROP ROTATION

1. The first thing of importance in the rotation is to provide for growing and turning under enough legume crops to keep the soil well equipped with nitrogen.

2. Plan to grow, as nearly as possible, all supplies necessary for the farm.

3. Keep a crop growing on the land all of the time to prevent the leaching and washing away of the soil.

4. Put a hog-proof fence around the entire farm, so that it can be utilized for a pasture for your own stock, and so that your neighbors' stock can be kept off.

5. Keep enough stock on the farm to consume all forage and grain produced. Carefully save the manure and return it to the land.

HOW SOILS CAN BE MADE RICH BY A CROP ROTATION.

We will use for illustration the most common crop rotation practiced by cotton farmers, which is as follows: Cotton one year, corn the next, and oats the next. It is possible to grow four soil-improving crops in this rotation. First; crimson clover can be sown in the cotton middles in October, and plowed under the following April as a fertilizer for the corn. Second; cowpeas can be sown broadcast in the corn at the last cultivation. Third; cowpeas can be sown for a hay crop after the oats are harvested. Fourth; after taking off the cowpea hay crop, the land can be seeded to crimson clover to be turned under the first of April as a fertilizer for the cotton crop.

If the oat crop is to be used for hay, hairy vetch can be seeded with the oats, which would give five soil-improving crops in three years.

DIAGRAM OF THREE YEAR ROTATION

Field No. 1	Field No. 2	Field No. 3
1914. Cotton, crimson clover as winter cover crop.	1914. Corn and peas.	1914. Oats and peas. Crimson clover as winter cover crop.
1915. Corn and peas.	1915. Oats and peas. Crimson clover as winter cover crop.	1915. Cotton. Crimson clover as winter cover crop.
1916. Oats and peas. Crimson clover as a winter cover crop.	1916. Cotton. Crimson clover as winter cover crop.	1916. Cotton. Crimson clover as winter cover crop. Corn and peas.

TABLE I

PLANT FOOD REMOVED FROM THE SOIL BY STAPLE CROPS ON RICH LAND

Pounds per Acre of Plant Food Removed by Crops.

Crops.	Gross Weight Air—Dry Matter.	Nitrogen	Phosphoric Acid.	Potash
Cotton—1 bale				
Lint	500	1.50	0.65	2.12
Seed	1000	31.50	12.17	11.62
Corn—50 Bushels.				
Grain, cob and shuck	3650	54.60	21.00	12.00
Stover	4000	41.60	11.60	56.00
Oats—50 Bushels.				
Grain	1600	35.00	12.00	10.00
Straw	3000	15.00	6.00	35.00
Cowpea Hay	4000		22.00	70.00
TOTAL		179.20	85.42	196.74

TABLE II

NITROGEN ADDED IN LEGUME CROPS.

Crops.	Air-dry matter. Tops and Roots	Nitrogen
Cowpeas in Corn	4000	100.00
Crimson clover (preceding corn)	5785	134.40
Crimson clover (preceding cotton)	2892	67.20
Total Nitrogen		301.60

When cowpeas, crimson clover, vetch, and other annual legumes are cut for hay, about one-third of the total nitrogen is left in the roots and stubble, and the remainder, or two-thirds of the total nitrogen, is removed with the hay.

On medium fertile soils, legume plants draw about two-thirds of their nitrogen from the air and one-third from the soil.

When cowpeas are grown on soils that will produce one bale of cotton per acre and the hay removed, the soil will be neither richer or poorer in nitrogen, as the nitrogen left in the roots and stubble is about equal to the amount of nitrogen the plant has drawn from the soil.

Two-thirds of 301.6 pounds, the total amount of nitrogen contained in the legume crops that are turned under in three years, equal 201.06 pounds, the amount of nitrogen added to the soil by crops turned under.

If all the grain and hay produced on the farm was fed to live stock, and the manure carefully saved, at least one fourth of the plant food in these crops could be returned to the land in the manure produced.

It is estimated that from eighty to ninety per cent. of the fertilizing elements in feeds is returned in the manure. In actual practice few farmers will save more than one-third of the manure produced by stock. From table 1, it will be seen that 177.7 pounds of nitrogen, 84.77 pounds of phosphoric acid and 194.62 pounds of potash were removed from each acre of soil in three years in grain and hay products. To this, one hundred pounds of nitrogen contained in four thousand pounds of cowpea hay should be added. The total plant food in feed produced is as follows:

277.7 pounds nitrogen, 84.77 pounds phosphoric acid, and 194.62 pounds potash. Estimating one-fourth of this saved in manure, we have the following amount of fertilizer in the manure produced: 69.42 pounds nitrogen, 21.19 phosphoric acid, and 48.65 potash. Add to this the 201.06 pounds of nitrogen returned to the soil in legumes, and we have: 270.48 pounds nitrogen, 21.19 pounds phosphoric acid, and 48.65 pounds of potash; which is the total amount of plant food returned to the soil in legumes and barnyard manure. Balance this against the amount of plant food removed in crops, and we have a gain to the soil of 91.28 pounds of nitrogen per acre, and a loss to the soil of 64.23 pounds of phosphoric acid and 148.09 pounds of potash per acre in three years.

The above calculation plainly shows that soils cannot be made rich by depending on live stock alone. It also shows

that by growing and turning under legumes and keeping live stock enough to consume all grain and hay produced, the soils can be kept rich in nitrogen. It also shows that phosphorus and potassium must be bought and put on the land year after year for all time to come if the fertility of the land is to be maintained.

An application of 200 pounds of sixteen per cent. acid phosphate and 100 pounds of muriate of potash per acre each year would more than supply the mineral plant food removed.

We should all unite our efforts to see that these two indispensable plant food elements, phosphorus and potassium, are brought to the farms of the South at the cheapest possible price.

The leguminous crops, such as cowpeas, soy beans, velvet beans, beggarweed and the clovers, gather nitrogen from the air and store it in the soil. If live stock are kept to consume the hay and grain produced on the farm and the barnyard manure is applied to the soil, the fertility and productiveness of the soil can be maintained at very little expense for commercial fertilizers. The only elements of fertility that will be reduced will be a small amount of phosphorus and potash each year, and these can be returned at small expense in commercial forms.

The above rotation was used only as an illustration. Each farmer can, with a little study, plan a system best suited to his own conditions, and one that will maintain the fertility of his farm.

With a well-planned system of crop rotation, any farm can, at the end of five years, be made to increase its yield of all crops from 50 to 100 per cent; fertilizer bills can be reduced one half; and the washing away of the soil, to a large extent, can be stopped.

Why not begin a crop rotation?

DISCUSSION.

J. F. DUGGAR. What do you think of the exportation of phosphate?

H. E. SAVELY. I think it ought to be allowed, the purchaser paying an export duty (which is now prohibited) just as much as Germany does for potash. I would vote for a change in the Constitution that would allow us to charge an export duty. I would suggest that the formulae of different fertilizers be published. That each formula give the amount of each element needed per acre. Every farmer would then know exactly what he is putting on his soil.

C. H. BAKER. I would like to know about the probability of getting those formulas. The sooner we begin to introduce these

things, the better. I should like to have all the formulas Mr. Savely spoke of.

P. H. ROLFS. I should like to say one word about the formulae. They have sprung up under necessity, and under difficult conditions. It would be a great step in advance to get a more thorough knowledge of the fertilizer constituents that go into making the formula. I do not want to take the time to go into the history of fertilizer formulas; the original work, of course, was done with the separate elements. Then sprang up the small fertilizer houses, handling the different elements, fish scraps, cotton-seed meal, etc. Then we found that one element used alone was not sufficient, so a second was introduced, and then a third. It has been a struggle in our education to get to the point where we are at present. We know our school system is a splendid system, but barbarously short of what it ought to be. So with the fertilizer formulae; they are immensely better than nothing, but far short of what they ought to be. It will take some time to accustom ourselves to the use of the fertilizer elements rather than to the complete fertilizer. It is a slow process of education; so I would say to our County Demonstration Agents, "Do not become discouraged if you do not see any revolution in five years." I have been in the work for over twenty years, and in that time the change has been marvelous, while from year to year I could hardly see it grow. The work we are doing in our laboratories shows us more clearly than anything we have had heretofore just what the relationship is of the particular form of fertilizer constituent to the particular piece of land or particular crop. Some very interesting things come up, and I should like time to discuss them, but I will merely mention in a general way that sulphate of ammonia is a splendid thing for such a crop as radishes, but a pretty poor thing for some other farm and garden truck. I think it would not be a very difficult thing to get out suggestive formulae, such as Mr. Savely spoke of.

I. E. SOAR. Now sometimes a man can make these things weigh up to a ton after putting a filler in, but the point is, why do you need to make a ton?

H. E. SAVELY. I picked up a bulletin of another State that had a lot of formulas that were very confusing to me. It would have been much easier if it had said, "Use so many pounds of ammonia, so many pounds of acid phosphate, and so many of potash." I like the simpler form.

A. That is much better, but we have gotten so used to reading it in percentages that we get the chemical carrying that amount.

P. H. ROLFS. It is a matter that will require time, but not so long as you might imagine. Fifteen years ago, the farmers were very ignorant on the reading of the formula on the tag; but now it will average at least one man in every community who understands them; but they are a block and a hindrance, and we shall probably have to unlearn them.

C. K. MCQUARRIE. One great step in advance that Florida has taken is that any farmer or anybody can buy any quantity of these elements that are commonly used. There are some States where it is almost impossible to do this.

P. H. ROLFS. As to the matter of publishing these formulae, we will have to start in somewhat slowly I think, so as not to plunge ourselves into greater confusion than we are in at the present time. We will have to take it up somewhat tentatively because of our lack of information on these points. Take the citrus fertilizers which are the most studied of any in the world, we still have a great deal to

learn, as I took the precaution to say this morning, and what I said referred to a particular type of soil. Now if we were working on flatwoods soil we would have a different condition from the rolling pine.

IRISH POTATOES

A. P. SPENCER

The Irish potato in Florida may be classed either as a truck or farm crop, in view of the fact that quite a large area is grown each year in certain sections of the State. Its adaptability is more general than was once thought, and it is now found growing in every County of the State with more or less success. The largest acreage is found in the flatwoods sections where artesian irrigation is possible. Many of these soils were considered quite worthless for almost any crop until they were brought into a high state of cultivation by systematic crop rotation, co-operative methods in marketing, and the proper cultural methods well understood. A much larger area of Florida can be used for Irish potatoes, and these lands are found in almost every County in Florida. The flatwoods soils, when they contain small amounts of humus, must have more humus added. High pine lands always need an addition of humus. Scrub oak lands are not suitable for the growing of Irish potatoes, although it is possible to bring these to a state of high productivity, provided there could be sufficient vegetation turned under, which in most cases would not be a profitable undertaking. It is important to understand that a large amount of vegetable matter in the soil will go a long way toward assuring a good crop in almost any section or with any type of soil in Florida.

DRAINAGE.

Inasmuch as the flatwoods sections of the State have been selected for growing Irish potatoes, the matter of drainage has presented itself in such a way that the farmers have necessarily made provision for drainage; but even with the drainage provided, there are seasons when the rainfall is above the average, and the Irish potato growers find some difficulty in taking care of the water in flatwoods lands. So that before the crop is planted, ditches should be cut to carry the water off in case of excessive rains.

It is a general practice to make the beds from 12 to 16 inches high on flatwoods lands. This, with the ditches at the ends of the rows, will give a sufficient drainage for ordinary seasons. While the Irish potato needs a moist soil, the

crop will not make a satisfactory growth if the ground is water soaked.

FERTILIZATION.

The Irish potato requires a complete fertilizer on most Florida soils. If the land has been in cultivation and has a liberal amount of humus, as much as one ton of fertilizer might be applied. A formula analyzing approximately 4 per cent. ammonia, 7 per cent. phosphoric acid and 8 per cent. potash would be recommended. The material necessary for a ton may be made as follows: 1055 pounds cotton-seed meal, 655 pounds of acid phosphate, and 290 pounds of sulphate of potash. The following formula is also used extensively: 800 pounds blood and bone, 900 pounds of 16 per cent. acid phosphate, and 300 pounds of sulphate of potash.

In the event that the land is new, it would not be advisable to apply more than 1500 pounds per acre, and in the proportions of the above stated mixtures. Where the soil is deficient of humus, an additional 100 pounds of cotton-seed meal or blood and bone may be added to advantage, as the ammonia encourages an early growth of the plants.

Stable manure is not generally used as the fertilizer for Irish potatoes, as it seems to have a tendency to increase the amount of scab. Commercial fertilizers may be applied either under the seed or above the seed in the beds. Both methods are practiced with good results.

DATES FOR PLANTING.

Florida has two seasons for planting Irish potatoes. From a commercial standpoint, the winter-grown potato gives the best results. These should be planted as early as possible, but late enough to avoid a freeze that may occur even up to March 1. In South Florida, January, or even December plantings are to be recommended; but in Central and North Florida, because of the danger of freezes, it would be better to defer planting until from January 25 to February 20. Irish potatoes can withstand a light frost. If the leaves are just through the ground, the injury will be very slight if they are frozen off, but if the top has made considerable growth the crop would be considerably damaged if frozen down. It requires from 80 to 95 days from planting to mature the crop to a marketable size.

FALL PLANTING.

For the present we may expect the fall-planted crop to be consumed locally. We can hardly expect to ship to

Northern markets and compete with northern-grown potatoes when the northern crop is moving; so that the fall-grown Irish potato crop is not so important from a commercial standpoint.

Attention has been directed to local markets that are quite frequently neglected. A few farmers in Alachua County, who had made provision for marketing their Irish potatoes, sold quite a large quantity at from $1.60 to $2.00 per barrel in Gainesville and neighboring towns during December and January. The distribution of these potatoes was more or less uneven, consequently a good many who might have used larger quantities did not do so. In order to secure a market for fall-grown potatoes, it is advisable to look well in advance, when quite a large acreage in each community might be placed on the market at a good price during the early winter.

As to methods of planting, cultivation, fertilization, etc., of the fall crop, it does not differ much from the winter planting.

SEED POTATOES

Because of the high price paid for northern-grown potatoes, it is advisable for farmers to grow their own seed wherever possible. It has never been found a good practice to plant the fall-grown seed for the winter crop. The potatoes do not have sufficient time for maturing, which results in an uneven stand; so it is best to import seed for winter planting, unless they may be carried over from the previous spring. In that case it is recommended that potatoes to be carried over should be spread out on the floor where they will mature and begin to sprout before being planted. The spring-grown crop may be kept over with but little trouble for fall planting.

VARIETIES

The varieties that have given the best success are Spaulding's Rose 4, Bliss Triumph, Look-out Mountain, and Irish Cobbler. The two first-named varieties are favorites on flatwoods land, as they grow rapidly, are good shippers, and are quite well established in the markets; and there is little difficulty in securing seed of either of these varieties just previous to planting time.

IRISH POTATOES IN ROTATION.

Irish potatoes can be used in a rotation with other crops, and with good results. In the potato-growing sec-

tions, it is a common practice to plant during January, when the potatoes will be ready to dig in April. Immediately after the last cultivation, corn is planted; and the digging of the potatoes is the first cultivation the corn gets. In some cases corn is planted immediately after the potatoes are dug. It matures about July 20, when cowpeas are planted between the rows, giving a third crop off the land. Or the land may be allowed to grow up in crab-grass, which can be cut for hay or turned under to form humus. Such a rotation gives a variety of crops, and keeps the land in good physical condition. Similar rotations may be obtained with other crops, leaving Irish potatoes for the cash crop. Such rotations improve the soil and make it more productive for the following year.

COST OF TRANSPORTATION

The cost of transportation in carload lots from Hastings, Florida, to the following points, for the year 1913, was as follows:

To Baltimore, 83c per barrel.
To Chicago, $1.01 per barrel.
To Cincinnati, 73.2c per barrel.
To Columbus, Ohio, 90.7c per barrel.
To Cleveland, Ohio, 88.9c per barrel.
Express shipments, of course, would be much higher.

DISCUSSION.

S. J. McCULLY. Do you know of any shipments being made in the fall to eastern markets?

A. P. SPENCER. I do not.

S. J. McCULLY. I should think there ought to be good prices.

A. P. SPENCER. From what I gathered from Mr. Robert Taylor, A. C. L. Freight Solicitor, it would not pay to do it, though a few shipments had gone out. Last fall they were getting northern-grown potatoes at the White House, Gainesville, at $1.00 per bushel. It is a matter of competition and transportation.

A. W. TURNER. What would be the proper time to plant potatoes in our section for a fall crop in Liberty County?

A. P. SPENCER. From the 20th of August to the 15th of September. I would say the 15th of September at latest, and as much earlier as you think advisable.

M. C. GARDNER. I want to know about the fall crop of potatoes for seed purposes.

A. P. SPENCER. I think experience has proved that the Maine seed potatoes were best. It is probable that our fall potatoes have not reached a stage of sufficient maturity for sprouting.

P. H. ROLFS confirmed this opinion, adding that they could be put in cold storage and kept until planting time, but that makes them more expensive than to get them from the north. We have sometimes spread the spring-grown seed potatoes under a building where

the wind could blow across them until they were sufficiently mature for germination. It has not paid to grow potatoes for seed in Florida. The northern-grown seed makes a more uniform stand.

S. J. McCULLY. Have you ever tried holding the spring crop of potatoes for the following spring?

P. H. ROLFS. It has been tried with very good success so far as germination is concerned.

S. J. McCULLY. I have tried it this spring, and they are growing off nicely.

M. C. GARDNER. Are spring-grown potatoes all right to plant in the fall?

A. P. SPENCER. Yes, that is all right. Plant only the tubers that show sprouts.

FERTILIZERS

P. H. ROLFS

Generally speaking, it has been assumed that the ammonia derived from chemical sources, such as nitrate of soda or sulphate of ammonia, leaches out of the soil much more quickly than the organic ammonias which are derived from cottonseed meal, dried blood, or similar materials. These statements, however, are based rather on a priori grounds than on direct tests. There is still so much to learn about the availability of the different elements, and the possibility of the different elements leaching out of the soil, and the inter-relations that these different elements have one with another, that we may well pause and not be too positive in our assertions in regard to the matter.

If we could just eliminate from our minds those facts that we believe to be so but are not so, we would make more progress in the next ten years than we have in the past fifty of this fertilizer question. I might broaden this assertion out to say that this would be the case in all of our agricultural work. I do not mean to include in this statement those fictitious stories that are told purely for the sake of "boosting" some particular material, the sale of which will prove of advantage to some commercial concern, but I am referring to the statements that pass current in unbiased literature. With this introduction to our discussion this morning, I want to take up immediately the formulae that we use in our Farmers' Institute Work, and discuss these somewhat in detail.

FERTILIZER TABLE

Giving the number of pounds of materials needed to furnish the equivalent amount of plant food contained in a ton of a ready-mixed formula.

Percentages or Units Desired	Ammonia from Sulphate of Ammonia 25%	Ammonia from Nitrate of Soda 18%	Ammonia from Blood 16%	Ammonia from Cotton Seed Meal 7½%	Ammonia from Tankage 6½%	Phosphoric Acid from Tankage 7%	Available Phosphoric Acid		Potash from Muriate of Potash 48%	Potash from Sulphate of Potash 48%	Potash from Kainit 12%	Phosphoric Acid from Bone 12%	Ammonia from Dried Fish Scrap and 10% Tankage
							From 14% Acid Phosphate	From 16% Acid Phosphate					
1.	80	110	125	267	308	285	143	125	42	42	166	166	200
2.	160	220	250	533	615	570	286	250	84	84	333	333	400
3.	240	330	375	800	923	860	430	375	126	126	500	500	600
4.	320	440	500	1067	1231	1140	570	500	168	168	667	667	800
5.	400	550	625	1333	1538	1430	715	625	210	210	833	833	1000
6.	480	660	750	1600	1846	1715	860	750	252	252	1000	1000	1200
7.	560	770	875	1867		2000	1000	875	294	294	1167	1167	1400
8.	640	880	1000				1143	1000	336	336	1333	1333	1600
9.	720	990	1125				1286	1125	378	378	1500	1500	1800
10.	800	1100	1250				1430	1250	420	420	1667	1667	2000
11.	880	1210	1375				1570	1375	462	462	1833	1833	
12.	960	1320	1500				1715	1500	505	505	2000	2000	

HOW TO USE THE TABLE

To make a fertilizer containing 4% Ammonia, 6% available Phosphoric Acid, 10% Potash from Nitrate of Soda, 16% Acid Phosphate, and Muriate of Potash. By looking in the percentage column for 4%, and in the Nitrate of Soda column we find 440 lbs., in the 16% Acid Phosphate column opposite 6% we find 750 lbs., and in the Muriate of Potash column opposite 10% we find 420 lbs., the sum of the 440 lbs., 750 lbs., and 420 lbs., is 1610 lbs., which is equivalent to and contains the same amount of Plant Food as 2000 lbs. of the 4-6-10 manufactured fertilizer.

In case it is desired to make a formula 4% Ammonia, 6% available Phosphoric Acid, 10% Potash and derive 2% Ammonia from Nitrate of Soda, 1% of Ammonia from Cotton Seed Meal, 1% of Ammonia from Blood, use 220 lbs. Nitrate of Soda, 267 lbs. Cotton Seed Meal, 125 lbs. Blood, 750 of 16% Acid Phosphate, and 420 lbs. Muriate of Potash. Any combination can be figured in the same way.

(b) If your fertilizer house handles only mixed goods write to the larger fertilizer houses in Jacksonville or Tampa for prices.

FERTILIZER FORMULAS.

	Ammonia	Phosphoric Acid	Potash
Corn	3	5	4
Cotton, Clay	4	10	4
Cotton, Sand	3	7	7
Sugar Cane	3	5	8
Sweet Potatoes	3	7	8
Irish Potatoes	4	6	8
Peanuts	3	6	9
Oats	4	5	4
Georgia Salad	5	6	5

The foregoing formulae have been compiled. We have practically a complete set of these. It must be borne in mind, however, that different soils will behave differently toward the same fertilizers, and that a fertilizer formula may be all right for one year and quite useless another year.

FERTILIZER LOST IN DRAINAGE

	Tank 1	Tank 2	Tank 3	Tank 4
July 1910 to June 1911.				
Gallons of Water	239	252	266	245
Pounds Per Acre Lost				
Nitrate of Soda	775	764	820	1112
Acid Phosphate	2.9	2.6	2.7	3.8
Sulphate of Potash	21	19	22	46
Limestone	249	291	239	265
June 1911 to May 1912				
	Tank 1	Tank 2	Tank 3	Tank 4
Gallons of Water	213	191	234	220
Pounds Per Acre Lost				
Nitrate of Soda	960	1130	2205	1351
Acid Phosphate	2.1	1.7	1.8	2.1
Sulphate of Potash	99	107	105	70
Limestone	563	633	514	694
May 1912 to April 1913				
	Tank 1	Tank 2	Tank 3	Tank 4
Gallons of Water	181	167	131	116
Pounds Per Acre Lost				
Nitrate of Soda	876	714	795	188
Acid Phosphate	2.3	1.8	1.4	2.2
Sulphate of Potash	454	447	286	190
Limestone	1062	1039	258	519

WHAT THE CHARTS TEACH.

These charts I have presented are developed from the exact work done by the chemists of the Experiment Station. The number of gallons of water referred to are the gallons of water which ran through the particular tanks. These would have to be multiplied by 3000 to get the number of gallons of water lost per acre.

The amount referred to under the heading nitrate of soda represents the amount of ammonia that is lost from leaching and by calculating this amount of ammonia into the form of nitrate of soda we have the amount given on the chart. This is done for convenience sake so that every man may know just how much material is lost. If it were stated in terms of ammonia it would not carry such definite information with it, but when the ammonia is stated in terms of nitrate of soda anyone can readily picture 100 pounds of it or any other quantity in his mind.

In the case of potash it should not be assumed that the potash leached out of the soil is in the form of high-grade sulphate of potash, but no matter in what form it was when it was leached out, the amount was calculated to sulphate of potash as a standard.

In the case of acid phosphate the explanation is similar. The phosphoric acid leached out was obtained and then we calculated back to the amount of 16 per cent. acid phosphate that it would make.

In the case of limestone it is quite probable that a little was lost in the way of sulphate of lime or land plaster as well as in the form of carbonate of lime. However, the whole was taken and calculated back to the amount of pure ground limestone it would have taken to have replaced the lime (calcium) lost.

In observing the different tanks you will notice that there was a very considerable variation as to the amount of ammonia lost; however, do not let this confuse you, as that question is an entirely different one and one that would require a two hours lecture by itself. What we want to observe here is the main fact of the large amount of ammonia lost under all the varying conditions. The variations noted in the different tanks form an extremely interesting problem, and one of great importance to the user of fertilizers in Florida. I hope some day to have an opportunity of discussing this rather fully and technically with you.

The figures placed before you in the tables show you that the ammonia is the one element in our fertilizers that you must keep your eye on. You will notice that it keeps running up and down, at one time a large amount is lost, at another time a smaller amount is lost. It is the one element that is likely to be deficient in our soils at one time and too abundant at another time.

The potash you will notice does not vary greatly nor

does so large an amount leach out as to cause us any particular uneasiness.

The phosphoric acid, you will notice from the tables, sticks well in the soil; therefore, we will not need to anticipate danger from plant hunger in that direction. The last line of figures shows the loss of lime in the soil. It was quite a great surprise to us to find so much lime was being leached out; but it explains why good crops so frequently have followed an application of lime.

AMMONIA

From the foregoing charts and the foregoing discussion you will see that the ammonia content of the soil is the one we need to pay the greatest attention to here in Florida. It is the one element that keeps fluctuating most rapidly, and one that is causing us more trouble than all the others combined.

While we pay for ammonia at the highest rate of any of the fertilizer elements, it is the one element that we can get nearly for nothing. All of our legume crops supply a large amount to the soil without charging us anything for it. In my lecture last night I showed you the tubercles that form on the different leguminous crops. By the aid of these, the legumes are enabled to transform a large amount of atmospheric nitrogen into ammonia, so it can be used by the plants. Professor Scott, or for that matter everyone who talked on forage and hay, has emphasized the importance of growing legumes. These plants are the ones that return to the soil more fertilizer than they have taken from it. In addition to returning fertilizer, they return another element which is called humus. This humus enables the soil to hold in its make up more of the soluble ammonia than it would be able to hold without the humus.

DRY SOIL

The conditions of the soil vary greatly, from being too dry for plant growth, to being too wet for plant growth. So far as the ammonia condition of the soil is concerned, it is as bad for the plant to have the soil too dry as it is to have it too wet. Fortunately a great many years the condition of the soil is neither too dry nor too wet, and then we have the maximum crop production. However, it frequently happens that our soils become too dry for the soil organisms to convert the organic ammonia into the form that can be taken up by the plants. Hence we have years

development into Modern English. The texts in Bright's Anglo-Saxon Reader are studied and Cook's edition of Judith is read. (3 *hours.*)

English VIII.—*Chaucer and the Middle English Grammar.*—During the first semester the works of Chaucer are read in and out of class. The pronunciation, grammatical forms, scansion, condition of text, analogues and sources are closely examined. During the second semester, Morris and Skeats' Specimens, Part II, is studied in connection with informal lectures on Middle English viewed as developing from Anglo-Saxon into Modern English. (*Prerequisite, English VII;* 3 *hours.*)

English IX.—*Engineering Exposition.*—This course will attempt to give special training to the Engineering student in the preparation of the various kinds of writing that he will be called upon to do in the pursuit of his profession. It will consist largely of the writing of papers (upon subjects assigned by the departments in the College of Engineering), which will be criticised and revised. (*Engineering Seniors;* 1 *hour.*)

HISTORY AND THE SOCIAL SCIENCES

Professor Bernard

Students entering the University for the first time who have not had satisfactory courses in European or American history are advised to include these subjects in their courses of study as a general cultural foundation for their other work. It is also recommended to those who expect to elect more than one course in the social sciences that they begin with the first course in sociology, this being the most general course in the social sciences.

History I.—*European History.*—The growth of civilization in Europe in its various aspects from the earliest historical times to the present. (3 *hours*)

History II.—*American History.*—The growth of nationalism, democracy, and industrialism in the United States, with particular reference to the origins of the problems of to-day. (3 *hours.*)

History III.—*History of Democracy.*—Not offered in 1914-1915. (3 *hours.*)

History IV.—*Industrial History of England and the United States.*—Not offered in 1914-1915. (3 *hours.*)

ECONOMICS

ECONOMICS I.—*Principles of Economics.*—The leading facts regarding business, money, banking, industrial organization, labor, taxation, tariffs, governmental regulation. (3 *hours.*)

ECONOMICS II.—*Selected Problems.*—Not offered in 1914-1915. (3 *hours.*)

ECONOMICS III*b.*—*Agricultural Economics.*—Business methods on the farm, markets, rural credits, and cooperation. (*Second semester;* 3 *hours.*)

POLITICAL SCIENCE

POLITICAL SCIENCE I.—*American Government.*—Federal, State, and local governments, with particular reference to the actual practice of legislation, administration, and the courts. Current political problems. (3 *hours.*)

POLITICAL SCIENCE II*a.*—*Principles of Political Science.*—Not offered in 1914-1915. Offered in 1915-1916. (*First semester;* 3 *hours.*)

POLITICAL SCIENCE II*b.*—*European Governments.*—Not offered in 1914-1915. Offered in 1915--1916. (*Second semester;* 3 *hours.*)

SOCIOLOGY

SOCIOLOGY I.—*Principles of Sociology.*—The evolution of social institutions, with particular reference to the family; selected social problems, such as population, race, immigration, poverty, crime, the church, education, and social reform. (3 *hours.*)

SOCIOLOGY II*a.*—*Modern Philanthropy.*—Causes and conditions of poverty and pauperism, preventive measures, relief, administration. (*First semester;* 3 *hours.*)

SOCIOLOGY II*b.*—*Criminology.*—Causes, prevention and treatment of crime and criminals, with particular reference to Southern conditions. (*Second semester;* 3 *hours.*)

SOCIOLOGY III*a.*—*Rural Sociology.*—Rural life in relation to sanitation, the school, the church, and various other cooperative enterprises. (*First semester;* 3 *hours.*)

SOCIOLOGY III*b.*—*Southern Race Problems.*—A study of the Negro Problem in its anthropological, social, political, and economic aspects. (*Second semester;* 3 *hours.*)

SOCIOLOGY IV.—Seminar.

SOCIOLOGY V*a* or *b.*—*Current Public Problems.*—(*Either semester;* 1 *hour.*)

CONCLUSION

In conclusion I will say that I cannot emphasize too strongly that if anyone adopts a hard and fast rule in regard to fertilizing crops, he will either frequently be disappointed in the results, or he will be using a great deal more fertilizer than his crops actually need.

From the discussion today, and from the charts presented to you, I have emphasized very strongly the point that the ammonia is the fickle element in our fertilizer formulas. It is the element we have to keep our eye on. It is the costly element if we have to buy it. We can produce it on the farm without its costing us anything and we then have it on the farm distributed through the soil in such a way that the plants can use it to the best advantage. As long as it is necessary for us to buy this costly element let us keep our eye clearly upon it. If a dry year occurs, we need to reinforce our formula with chemical nitrogen; when a wet year occurs, during which much water leaches from the soil, we need to apply a considerable quantity of nitrogen.

The potash leaches out of the soil to an inconsiderable extent, as you have seen. It needs only minor attention, and one or two good applications a year to ordinary farm crops is sufficient.

Phosphoric acid, as you have seen, sticks in the soil very tenaciously, and it is quite probable that one application of a large amount of phosphoric acid will supply a sufficient amount of this element to last the plants for several years.

Finally, no formula of fertilizers will prove to be the best under all varying weather conditions, nor will any particular fertilizer formula prove to be the best for all varying soil conditions. We must vary our formulas for different weather conditions and different soil conditions.

DISCUSSION.

D. R. McQuarrie. In place of nitrate of soda, if you had used cotton-seed meal and tankage, what would have been the result?

P. H. Rolfs. It was not nitrate of soda. As a matter of fact these tanks have had three forms of ammonia.

D. R. McQuarrie. Which form leached out least?

P. H. Rolfs. That is a point on which we shall have to suspend judgment for some time. We have had these experiments going only three years, and that is not a sufficient length of time to be sure of the result. It is frequently said that sulphate of ammonia washes out more quickly than organic ammonia, but the data at hand seem to call the statement into question.

Q. Is there any particular relation between the amount of nitrate that washed out and the amount supplied?

P. H. ROLFS. Yes, there is a relationship. The amount washed out varies under different conditions, and is not always proportional to the amount of ammonia applied. A part of the ammonia leached out was elaborated in the soil by organisms.

I. E. SOAR. Which washed out more, sulphate of potash or muriate?

P. H. ROLFS. We don't know.

W. L. WATSON. Was it necessary to reinforce the ammonia in a dry season?

P. H. ROLFS. Yes, it would be necessary. It became very apparent last year. We had an extremely dry season. The ammonia was placed in the soil, but did not become available to the plant. The amount of ammonia applied to the soil would have given good results in a normal season. We must look out for both dry and wet season, but the dry season is the one we have overlooked in the past. In dry seasons the bacteria and other organisms are unable to vegetate in a normal way, consequently, very little nitrogen is being fixed in the soil. Therefore the land is poor in assimilable nitrogen, not because it has been leached out, but because the bacteria cannot convert nitrogen into an available form for the use of the plants. Then we should add a form that can be quickly taken up by the plants.

R. T. KELLEY. In a case of that kind the crop would not use all of it?

P. H. ROLFS. No. The moment you have good cropping weather you will have an over-supply of nitrogen, and a rank growth results with a small crop of fruit or grain. If a dry period follows a wet one the plants are likely to suffer from ammonia hunger, because the available ammonia was washed out by the rains, and in the dry period the organisms cannot elaborate enough to satisfy the plants,—shedding of bloom of flowers. An application of nitrate at the right time will prevent this trouble.

In conclusion I want to add, if we could only by some magic get rid of the things that are not so that we believe to be so, we would make more progress in the next 10 years than we have in the last 50. As Josh Billings puts it, "I would rather not know so much than to know so many things that are not so." You will find it stated repeatedly that to get a high per cent. of sugar in the cane juice you must add potash. Yet right in the face of that are the long continued experiments made in the West Indies and here at the Experiment Station which do not show that you can change the percentage of sugar in the juice one iota by adding potash.

CO-OPERATIVE BUYING OF FERTILIZERS AMONG FARMERS

S. J. MCCULLY.

In beginning I will read a Circular sent out by the Department, that has caused more criticism than anything that has been sent out in the State of Florida.

(At this point Mr. McCully read a circular distributed by the U. S. Department of Agriculture,

which gives directions for home mixing of fertilizers.)

Gentlemen, I contend just as the Department does in this circular, that we can save from 25 to 50 per cent. on our fertilizer bills. First, the fertilizer agents have a price practically for every land. Now that is a broad assertion. I will take one particular fertilizer, Lettuce Special. I am not going to call any names unless it is necessary. In our County last fall there were quite a lot of demonstrators there and I had occasion to follow right behind a man who was around selling Lettuce Special. I do not remember its analysis, but that does not make any difference. I have in mind the names of three men to whom he sold it—one at $36, one at $38 and one at $42. It is a fact that it was the same fertilizer, and they all bought on 120 days time. This is why I contend that the farmers should co-operate and buy the chemicals and do their own mixing.

Now we find the greatest trouble in getting the farmers to co-operate and buy the chemicals. One reason is because the fertilizer man comes along and says, "It's no use for you to listen to the Demonstration Agent, he will give you a formula that is worthless. What does he know about it?" He says that if you buy the chemicals you do not save anything. But he will mix them for you, sell you on time and take your note.

I had the circular I have read you published and distributed, 75 or 100 over the County. Shortly afterward I met a gentleman going along the road; he said, "By the way, I read your circular in the Banner the other day. I showed it to a fertilizer man and he looked at it and said, 'You can't do anything like that. You don't know anything about the chemicals." Honestly, he made that man believe the chemicals came in liquid form, and he wanted to know of me how in the world he would apply it.

In November I was in Dunnellon and I spoke to a man who as I knew was going to buy 50 or 75 tons of fertilizer. I suggested that he buy his chemicals and do his own mixing. He said he had a price from a house in Jacksonville, and showed it to me. As I remember, they had cut the price some; but when we figured it out he said he would keep the figures and show the fertilizer man, and the result was he got his fertilizer at $26 a ton delivered at Dunnellon. You see the point?

There is another thing I want to ask, and anyone can answer. Why have mixed fertilizers advanced $2 a ton since last year. The phosphate mines have shut down on account

of over-production. Where does this advance come in? I know where it goes—it goes into their pockets. (Information by Mrs. Prange that there had been an advance in price of tankage and of organic ammonia in the packing houses).

(Suggestion by MR. SOAR: People working in the phosphate mines say it cost $1.25 a ton to load phosphate on the cars.)

Now we want to see some figures gotten out by the nitrate people; and I believe they are right, and I want to compare their figures with the prices the fertilizer people have sent out. Take this one, Ammonia 4, phosphoric acid 5, potash 6. Listed price to-day is $32 per ton. Content, 450 lbs. nitrate of soda, 125 lbs. dried blood, 875 lbs. acid phosphate, 300 lbs. sulphate of potash. That same company has listed prices probably sent to every agent in the State; but the quantities at those prices would actually cost you $20.85. Take another, 4-7-6. This is about the usual thing for cantaloupes; nitrate of soda, dried blood, acid phosphate and sulphate of potash. Now we can buy these materials and have them laid down at any station in Florida for $27. Now until we can get the farmers to open their eyes to these things, we are up against a hard proposition. I find another thing in my work in trying to get men to co-operate and buy chemicals, they do not understand anything about the formulas, they just take another man's word for it. Now my plan is, just to try out the different chemicals, take a little plot of ground and plant a few rows of one kind of plant and use different chemicals on it. I do this for the benefit of my Demonstrators and Co-operators.

FERTILIZERS AND MARKETING

N. M. G. PRANGE

I wish to express the great pleasure I have had in attending your meeting. It would take too much time and be entirely unnecessary to endorse the able work on the many subjects covered. I will, however, call attention to a most important point, which, it seems to me, has not been given the emphasis it needs. As perhaps most of you know, for about six years I have been connected with the largest fertilizer concern in the South, not to sell fertilizer, but to advise the grower as to his best interests. In this six year's work I have found that fully ninety per cent. of the failures were based on improper handling of the soil. Now I know that most, if not all of you, have been selected

for your positions because you are good farmers, so you appreciate the full importance of proper drainage, plowing and cultivation, and the great necessity of keeping up the humus content of the soil, but the general Florida grower depends too much on the fertilizer sack.

It is easier to sell him 600 pounds of fertilizer to go on a three-inch plowing, than to convince him of the value of plowing six inches deep. I suppose you all accept the general rule that on field crops the amount of fertilizer profitably used is 100 pounds per acre to each inch depth of plowing, this up to ten-inch depth. While it is better to plow even deeper than ten inches, it has not been found profitable to use over 1,000 pounds per acre on the common field crops. But you will find this, so simple to you, is little understood by a large number of men in your care. Generally they do not appreciate the value of deep plowing; and when they do, they are likely to plow new land deep, which, as you know, is not advisable, or to do their deep plowing at the wrong season; for instance, just before planting the corn, thus drying out the soil, and being a detriment instead of an advantage. Then too, shallow cultivation should be equally emphasized. Many a crop has been ruined, or at least seriously injured, by too deep cultivation, and the people must be taught to do this plowing and cultivating when the soil is in the right condition.

The matter of humus in the soil has been most carefully covered, but it cannot be too greatly emphasized. No plant can live on chemicals alone, and in order to get the greatest benefit from chemicals, there must be plenty of humus in the soil. It is here that the citrus growers have so much trouble. The trees must have humus, and the grower has trouble to get this humus in the right form, and great trouble if he gets it in the wrong form.

MARKETING TRUCK AND FRUIT

I would also speak of marketing. To be sure, most of your work is with the field crops, but some of you are in the trucking districts and others will find your men growing small areas of truck crops at certain seasons for a little extra money. Now, the f. o. b. buyer with cash in hand is the best market; the shipping by car lots is next advised; but we must meet conditions as we find them, and in many cases you will have to depend upon the much abused commission man. (You know when the grower has given seemingly all the compliments (?) at his command to the fertilizer man and the transportation com-

panies, he can generally find a few more for the commission man.)

I believe I hold the record for money-making by growing ordinary truck crops on small acreage. I raised fine crops, to be sure, and packed them well, but I consider the greatest factor in my success was my method of marketing, so perhaps a few words as to this may be of value.

The first precaution is, of course, to select an honest man. In this you are aided by the National League of Commission Merchants; but this not enough. Get a man who handles the kind and grade of products you have to market. A commission man may have an excellent trade in fruit, but give little attention to garden products; again, if he is able to get fancy prices for fancy goods, you will find that he can do very little for your inferior goods. The best of fields will have some seconds worth sending to market; but the grower's name never should appear on such packages if he wishes to build a reputation for quality.

After selecting men in different cities, stick to them; never divide your shipments to a city, as you are thus making the shipments compete against each other. Keep your house informed as to the crops being raised in your section and as to their general conditions. Just your crop may have no particular influence on the market, but its condition is an indication of what may be expected from that section of the State. The commission man appreciates such information. Co-operate with him and he will work for your interests. For instance, he will not only keep you carefully advised as to market conditions; but on a rising market he will hold your goods as long as he can, while in a falling market he will put them to the front and sell them as soon as he can, in each instance getting for you the maximum amount possible to obtain. Every twenty-five cents to seventy-five cents per crate to be gained in this way helps to swell the season's profits; but there are times in every city when good prices cannot be obtained because of heavy shipments. These times almost invariably follow a scarcity, during which high prices have prevailed. The lesson from this is never to ship to the city sending out fancy quotations; instead, allow time for the glut which is bound to follow, to have been cleared up, so that when your products arrive there will be a scarcity, which insures remunerative returns. It can be depended upon that as soon as the news of the glut has been received, the crowd has

turned to other channels. By keeping his eye on markets from Chicago to the East, and taking advantage of the natural rise and fall, the attentive grower can always find some place in which there is good demand for his products.

SWEET POTATOES

T. K. Godbey.

I plant something like 100 acres a year now. Most important in farming in the South is clean land, free of stumps, and labor-saving machinery. The machinery that you call new and modern here was used in the West when I was a boy, more than forty years ago; and to tell you the plain straight truth the South is fully forty years behind in farming advantages. They are behind; behind in the use of something that will take off the hard work in farming. Farming is the easiest position to fill, and I have done everything that a farmer could do, and have done things with my own hands. I do not farm by proxy. I am a Westerner and the Western man does not ask anyone else to do his work. They do hire labor and pay more than the South for it, but they get twice as much from their laborers as we do in the South, and still they sell their crop for less than the Southern man does. It is because they have men there who can turn out the work. When I tell you a man should cultivate 100 acres it sounds fishy, but I can raise 100 acres of corn by myself and I can raise 100 acres of sweet potatoes myself. I can cultivate 100 acres.

PREPARATION OF THE LAND AND PLANTING

The way I prepare is this: I believe in deep plowing usually, but you should not plow for sweet potatoes. I usually follow oats or velvet beans with sweet potatoes. I have had velvet beans in the field the year before, and it makes a good place for sweet potatoes; or else I plant them on oat stubble, and plant them the first of July. If you want potatoes that will keep over winter you do not want to plant them early. I take a "middle-buster" and run off my land with that in four foot rows, then I take a disc cultivator with a fertilizer distributor. This fertilizer distributor is my own invention. I had that put on the cultivator and it took me about four years to do it, but they finally came around after I had made one myself and showed them how. I make a bed and straddle it with the middle-buster

and put in the fertilizer at the same time. One man can make six acres per day and put in the fertilizer. Two hands, one to stake and one to drop, ought to plant about two acres a day or one acre a man. After the beds are planted and the potatoes begin to grow, I take that same cultivator and set it to throw the dirt to the bed and work it with the disk cultivator. When the vines begin to run and get in the way, I put the vine lifter on the cultivator. This is made out of spring fingers that run along, and the first are wide apart. These strike the vines and lift them. The next two are closer together, and they strike them farther up and pull them more. The third are still closer together, and they draw the vines up so they go between the fingers, and the disks do not throw any dirt on the vines at all, and you can work them with this until the vines begin to lap across the rows. If you handle that machinery properly you can work 6, 7 or 8 acres a day, according to the speed of your team. I work my potatoes myself. You can figure out how many acres you can work. You do not have to work them oftener than every two weeks, and a lazy man will be able to work six or seven acres a day and a smarter man can get over 100 acres in two weeks. This is all there is to working potatoes.

HOW TO PRODUCE SHORT TUBERS

Now, as to plowing, and why you should not plow deep. The sweet potato belongs to the morning-glory family, and the tubers are not really tubers but simply roots that have stored up a lot of starch, and when conditions are favorable they make nice smooth potatoes, and when conditions are not favorable they make strings. If you plow deep the potatoes will try to run as deep as you plow, and that would make long ones. There is also a difference in variety. There are some varieties that have a tendency to go down, and there are others that seem to scatter potatoes all over the ground and run along near the surface. Such potatoes usually make stringy potatoes. The reason that potatoes that grow straight down make good plump potatoes is that where they hit hard ground it causes a plumpness, and though the roots may go farther down and draw up the moisture there is a swelling in the soft ground. There should be a hard bottom to the bed; but the more trash, straw and litter of all kinds you can incorporate in the soil the better. It often happens that the man who has to go out in the woods and rake up straw to make his bed makes a much better crop of potatoes than does the man

with the commercial fertilizer. Then, almost every farmer knows that cow-penning is good for sweet potatoes. The cattle tramp the land and make it hard, but the top is worked up and still the bottom is left hard. As I said before, some potatoes will run along the land and not go down. The Triumph, which I originated, is prone to go that way, and it is inclined to make a stringy potato. (Demonstration of different varieties.)

ORIGINATING NEW VARIETIES

As I said, the sweet potato plants and the morning glory belong to the same family and the potatoes are simply roots. The Porto Rico yams grow downward and make a nice smooth potato with hardly any strings. Florida is the only State in the Union that I know of (and I have made diligent search along this line) where the sweet potato blooms and matures seed on the vine; and that is not often done even in Florida. I have watched for sweet potato seed each year and gathered them all. About twelve years ago I secured seed and planted them, and out of the lot I got the Triumph, which I decided was worth keeping. It was early and had good keeping qualities. It has been ten years before I could find seed. Last year I got 100 seed off forty acres, and it took me two or three days to find these. After planting these I have only 15, and I now have 15 new seedling potatoes. I hope in the lot I will find something better than we have had before, and I feel pretty sure I will succeed. Some of them are very promising.

HOW TO KEEP SWEET POTATOES

One of the main things is to keep the potato after you grow it. I have found this extremely easy, that is, after I learned how. Most farmers have their own way of doing this. One fall it was very wet and warm, and we took our potatoes and covered them with pine bark. The warm wet weather continued and the potatoes had begun to rot. Some of the neighbors were tearing down their banks and trying to dry them out and then bank them up again; but that did not do well, for it rained all the time. So I went to the banks and made a hole at the bottom to let the air in and one in the top to let the air out, (this top hole is usually made in the bank). My potatoes were then covered with a white mold and looked like they were on fire. I let the air in at the bottom and left them. In a few days the white mold had dried out, the rotting had

stopped, and they kept the rest of the year. I then knew that the secret of keeping potatoes was ventilation, and I have never lost potatoes since that after they are put in the banks. Some of them have been water-soaked, some have become frost-bitten and partially rotted; but I did not separate them but hauled them all together, and the rotting never increased. Last year I banked over 12,000 bushels, and I know there were not twelve bushels of rotten potatoes in all. I kept a carload of Triumphs last year until July, and shipped them to Atlanta, and they were sold on the Atlanta market in August. I have no fear of keeping sweet potatoes at all, and I keep them easily. I have never put more than 200 bushels in one bank. I bank them in long banks. Now I think I have told you all I can but I will be glad to answer any questions on points that I have skipped over.

DISCUSSION

Q. How wide apart do you plant them?

T. K. GODBEY. If for market or for table use I make them four feet apart and 18 inches apart in the row. It has been tried out at nearly every Experiment Station in the South, and 18 inches has proven to be about the right distance.

Q. What kind of fertilizer do you use?

T. K. GODBEY. I have used Sweet Potato Special, so-called, although you know the fertilizer house will put up two sacks of fertilizer and name one Sweet Potato Special and the other * * * * * Special, but it all amounts to the same thing. The fertilizer I used last year was 4-8-8 goods. I used about 700 lbs. to the acre.

Q. What is the average yield?

T. K. GODBEY. My yield was about 100 bushels to the acre, and I call this a fair yield. I have raised 300 bushels to the acre, but an all round average I would say to be 100.

S. J. MCCULLY. Do you use draws or vines?

T. K. GODBEY. Draws, altogether. I grow sweet potato plants for market, and do not have time to grow early potatoes. My shipping season usually closes out (that is the rush end of it) the first or middle of June. After that I have a surplus of plants, and I let these grow until a foot long, then pull them up.

S. J. MCCULLY. Do you drop the potato vines across the row or lengthwise?

T. K. GODBEY. In planting sweet potatoes I hire almost anybody I can get. I put a dropper ahead, and a man behind to stick, and some of the negroes like them one way and some the other and it does not make any difference.

A. W. TURNER. Do you plant the roots in the ground?

T. K. GODBEY. No. I stick the vine in the middle.

R. T. KELLEY. Do you select the potatoes?

T. K. GODBEY. No. I plant all I come to, because selection amounts to nothing. The sweet potato is only a root, and not a seed, and makes the same kind of tuber.

C. K. MCQUARRIE. Do you pack the ground?

T. K. GODBEY. No. Probably you think you should plant the vines as soon as you get them from the ground. This is a mistake. Pull them up, pile them in stacks, and let them lay with the roots together 3 or 4 days, and then plant them and they will live twice as well, sometimes 10 times as well. The same is true of the vines, only they can lay longer and the leaves shed off and this is best for them.

G. W. BELSER. Should you plant them in wet ground?

T. K. GODBEY. I planted in July, and it usually is wet then * *

M. C. GARDNER. Do you mean you have a different potato from each seed?

T. K. GODBEY. Every seed you plant will make a new kind. They always come different and never true to the parent plant.

R. T. KELLEY. Is there any difference in planting, if you put several joints in a bed?

T. K. GODBEY. No, except possibly a little larger yield.

I. E. SOAR. Is there any difference in the yield from the draws or vines?

T. K. GODBEY. I could never tell any difference at digging time if planted at the same time. I find a good strong plant or vine will grow off good and ensure a good yield. If they stand a month and do not get a good hold the yield will be poor.

J. D. BROWN. Is this true: Potato growers contend that seed from a plant that produces large potatoes will produce likewise?

T. K. GODBEY. No, it is not so. Irish potatoes are true tubers, they start out with a stem and have no roots at this end (holding one up), and the sweet potato is different the other way and most of the eyes will be at the back. It is simply a root, and if you get plants from the old vines, if they live over, as they often do, the plants from those old vines are as good as if you put out the tubers.

S. J. MCCULLY. Have you ever tried selecting large potatoes?

T. K. GODBEY. Yes, there is no difference. I have had men write me that they had a new potato, something wonderfully fine, and it was gotten by planting two vines in the same row and in some way it grew a different potato. It is not so. This is not true. The man who sends out such news either takes you for suckers or does not know what he is talking about.

S. W. HIATT. Last year I planted Dooley's and long red negro yams. How do you account for part being red and part yellow?

T. K. GODBEY. I have had potatoes myself when there was only one kind in the field come this way, some would be red, some yellow and some white.

S. W. HIATT. They were found only in that one row.

T. K. GODBEY. I have had the same experience. Potatoes make long vines, and the potatoes will put down roots, and if the vines and roots lap over the vines will make potatoes in the other row.

S. W. HIATT. I had two kinds on one vine.

T. K. GODBEY. The old bunch yam was the worst, I think, and the Dooley was that way. The bunch yams I got had forked leaves and after planting them a while some of the leaves were smooth.

A. W. TURNER. What is a good early potato?

T. K. GODBEY. The Triumph is the earliest; the Nancy Hall has been a leading market potato on account of the nice shape, earliness, fine quality and color. The Triumph is a good potato, but its long habit of growth and white flesh make it unpopular in the market. It is one of the best for canning and is used extensively. The Porto Rico is as early as the Nancy Hall. So far as I can see it is a fine

one. The Nancy Hall is being driven out of the market on account of its being subject to blight.

S. J. McCULLY. Do the Nancy Halls have a tendency to crack?

T. K. GODBEY. Not very much. Sometimes they do. This cracking is due to the condition of the soil and fertilizer. I have low, flat woods land and plant in July. If planted early they crack, but later they do not do so.

Q. Which variety yields best.

T. K. GODBEY. The Triumph.

R. T. KELLEY. In planting Nancy Halls, do they make very small potatoes?

T. K. GODBEY. Yes, this is a small variety. The market wants a small potato, so this has been a favorite.

Q. Do you get better yields by planting early?

T. K. GODBEY. Not too early, say the middle of June would give the best yield. I plant especially for seed, and I do not want my potatoes to grow large. I plant them in hills and close together for seed, but 18 inches apart for the market.

S. J. McCULLY. How often do you plant potatoes on the same land?

T. K. GODBEY. I always skip one year at least, and I like to skip two, for I get better results.

Q. What do you plant in the meantime?

T. K. GODBEY. Corn.

Q. Is there a good yield following sweet potatoes?

T. K. GODBEY. Yes, I get thirty to forty bushels of corn per acre. I usually do not give my corn land any other preparation except to turn the hogs in, and they root out the potatoes, and then I disk the land smooth.

J. D. BROWN. How many acres do you plant from a bushel of potatoes?

T. K. GODBEY. My experience has been that there are about a thousand plants to the bushel; sometimes 1,500, sometimes 2,000. The Triumph will make twice as many to the bushel as the Nancy Hall.

Q. Do you bed your potatoes?

T. K. GODBEY. Yes, on land that is tile drained and irrigated.

B. F. WILLIAMSON. How many acres do you get from 1,000 draws of potatoes?

T. K. GODBEY. These ought to furnish you 4,000 or 5,000 vines. It depends on the potato and the variety. The Triumph potato makes a little longer vine than the Nancy Hall, and you get a few more cuttings.

Q. What do you think of cutting vines off? Does it ruin the crop?

T. K. GODBEY. Yes, undoubtedly.

C. H. BAKER. How long do you cut the vines?

T. K. GODBEY. About a foot long.

D. C. GEIGER. Would it be better to bed the land or plant level?

T. K. GODBEY. That depends on conditions of soil. Now in Kansas they plant corn in a trench because it is dry there. In most places where they grow Irish potatoes they grow them on a level, but at Hastings it is necessary to bed them high. That is a necessity here in Florida. It is the same way with sweet potatoes. If you have high, dry land that is drained, you do not need to make the bed at all. I could not plant this way on my land, for it is flat-woods land underlaid with clay, and I have to make the beds as high as I can, and the higher the better. My idea is that the land should all be laid off and

drained. I suppose you Agents all know how to plow. I could tell you that most people in the South do not know how to plow. Always commence in the middle of the field and plow out to the fence. This is the best way, and you can turn the dirt away from the fence. You will have a deep furrow next to the fence and the rows will begin to slope down towards the fence from the middle, even if the land was originally level, and when it rains, the water will run out into the ditch around the outside and run away. Now, if the people at Hastings did not do that way they could not raise Irish potatoes. They have a furrow on the outside. The land is practically level. They tell me there is not a difference of four inches to the mile. They accomplish the good things because they know how to farm.

Q. Do you run a plow through to mix the fertilizer.

T. K. GODBEY. No. There is the distributor on the cultivator and the fertilizer is put down ahead, and then the disks come along and stir it together.

I. E. SOAR. Why do some hills produce so much more than others?

T. K. GODBEY. You will find there is a little more favorable condition in those hills than others; that is why those hills do the best.

Q. Do you use stable fertilizer in draw beds?

T. K. GODBEY. Yes, also commercial fertilizer. I like raw cottonseed to bed on. The sprouting of the seed in the raw cottonseed will make the germinating seed produce heat, and that little bit of heat warms the ground and makes the plants come on earlier. For early plants use stable manure. It should be wet. An inch or two is all you can stand, and it will not hurt your potatoes. I would say to put down a layer of earth first before you put in the potatoes. In making a draw bed it is best to scatter some kind of straw, pine straw or wire grass, or other stuff of that sort with a body to it. This straw keeps you from pulling up the potatoes when you pull the plants. Broom sedge straw is not good, for it keeps the land too dry, but it will do. I have used it myself and it is good to hold the potatoes down.

I. E. SOAR. Would oak leaves do?

T. K. GODBEY. They are not very good for this.

Q. Do you think that the thoroughness with which you mix your fertilizer and the control of moisture have more to do with the cracking than the early planting?

T. K. GODBEY. No, I do not think so. I have a firm belief that it is due a great deal to the variety of potato. There are some that I have never seen crack under any conditions.

Q. Do you think the amount of potash used has anything to do with the cracking of the potatoes?

T. K. GODBEY. No. Too much nitrogen may do it, but this does not always work. However, I have seen land extremely rich in nitrogen make an enormous crop of potatoes. The yield of potatoes is due more or less to the mechanical condition of the soil. There is no crop that I know of so particular about the mechanical condition as the sweet potato. It does not matter how much or how little fertilizer, it all depends on the mechanical condition. The best crop I ever made was on barnyard manure and a little phosphate.

I. E. SOAR. On land that has been cow-penned does it crack more?

T. K. GODBEY. Yes, on old land it occurs more.

C. K. MCQUARRIE. Do you claim that sweet potatoes from the vine are the same as the draw, and as early?

T. K. GODBEY. Yes, there is no difference.

W. L. WATSON. Then why is it considered that there is a difference?

T. K. GODBEY. Well, people plant draws early and later on they cut the vines and set them out and they usually make a better crop from the vines and they keep better, and a great many are positive that the draws are no good if planted late. They have never tried them. I have done so from the beginning to end, and I find that it is the lateness of the potato that makes a good keeping potato and makes a better crop. I have never made good keeping potatoes early. The only advantage of earliness is the market, and if I wanted potatoes for the early market I would simply keep over my crop and sell them early the next year.

I. E. SOAR. Do you advise earlier planting on dry land than on wet?

T. K. GODBEY. No, I have both kinds of land and plant them at the same time.

Q. What is your experience in planting them as you would Irish potatoes?

T. K. GODBEY. This is not a custom among farmers in Florida, but it is a pretty fair way to get early vines. They make a few early potatoes, and the pieces you plant will grow and make a good potato; but you can see the pieces sticking on to the new part. The potatoes are poor and always inferior and cannot be sold late after better ones become plentiful. Last September I sold over 100,000 sweet potato plants in South Florida, and I have sold them in December around Miami. I plow new land, after taking out all the stumps, for I never plow stumps; then I take a turning plow with a rolling cutter on it and turn the land as shallow as I can because the vegetation rots quicker, and I always plant sweet potatoes on that land, because it is not fit for anything else. In plowing land we often come across stump holes, and of course this land is worked deep. I have found that potatoes planted over stump holes send the roots down ever so far, and after harvesting a top crop I often find that if I go down farther I will find a nice lot of potatoes. They always go as deep as the land is soft.

W. L. WATSON. What would you say about breaking?

T. K. GODBEY. I do not know. Run over the land with a middle-buster and that is all.

Q. What about putting a crop of sweet potatoes on oat stubble that has been plowed eight or ten inches?

T. K. GODBEY. The land used has become compact during the winter and if not freshly plowed you will find that the bottom soil is harder and the potatoes form in the loose part.

C. K. MCQUARRIE. It seems, then, that hardpan land would make good sweet potatoes.

T. K. GODBEY. No, it is too sour. The sweet potato does well on new land that is not too sour, but hardpan contains too much acidity. I have seen land, very loose hammock land, planted in sweet potatoes that have become very stringy. Bedding would not have helped in this case, for they would have been worse.

O. L. MIZELL. Is there any particular time for digging?

T. K. GODBEY. No, I take them just whenever I want to. I have piled them, mud, water and potatoes in the bank at once, and in a few days they would be dry, and the mud would be dust. After the vines have been frost-killed, the potatoes should be dug up, or they may sprout again.

G. W. Belser. There is an idea that if you dig potatoes you should not let the moon shine on them. What do you say about this?

T. K. Godbey. There is absolutely no truth in this. The moon has nothing to do with it, unless possibly you want to dig them at night, when the moon would be of aid then.

T. Z. Atkeson. Gentlemen, this has been a most interesting and instructive discussion to us all. We have all heard Mr. Godbey with much interest and appreciation. I feel like one fellow who went to Mr. Barnum's Winter Garden in New York, paid his price of admission, and on getting in, he asked some one to show him Mr. Barnum. "There he stands over there." The man looked at him and then turned and walked away. He had gotten his money's worth. And I feel that same way. Mr. Godbey has been exceedingly kind in coming up here today in the disagreeable weather we have had, and I feel that we owe him a rising vote of thanks for coming and speaking to us today.

(This was unanimously given.)

THE STATE NURSERY INSPECTION LAW

Dr. E. W. Berger

I will not detain you long except to tell you that there is a State Nursery Inspection Law, and that something is being done along that line. It will interest you; for, in meeting up with the farmers, some of them will be planting fruit trees, and this inspection work applies principally to fruit trees. I have a few circulars here that I will have passed around to you. I wrote a little paragraph sometime ago that I will read you:

> What does it profit a man if the world be made to bloom and two blades of grass be made to grow where only one grew before, if, when the insects come and the diseases begin to ravage, he stands idly by unable to stem the tide of destruction? It is not enough to be able to grow a crop, but the grower must be prepared to protect the crop during an emergency, whether the same be frost or fire, or insects and diseases.

Each man has his troubles, and the more successful a man is in getting something to grow, the more rascally bugs there seem to be to take it from him. There are the cucumber growers. They are getting desperate. They grow the cucumbers and the diseases come along and get them. Of course the best way to protect your crop is to avoid introducing new insects and pests. That is the form of prevention that I mean; the keeping out of these diseases and pests by means of inspection. We have State Boards of Health and City Boards of Health, and they are trying to prevent the spread of diseases by isolation and education. The object of the law is, then, to check the spreading of any insects and diseases of plants that may already be in the

State, and to prohibit the introduction of any new pests, and something is being accomplished along this line.

In bringing this message before you, I regret that our inspection does not apply to vegetable plants; but, practically altogether to trees. The law, I presume, is broad enough so it could apply to vegetables; but with only one Inspector, and a few deputies, and only $1,000 to run the office with, outside of my salary, we cannot appoint many deputies, and it has been our policy to put only those things on paper that we could undertake to handle, and as it is impossible for us to undertake the inspection of vegetable plants, bulbs, roots, etc., we have limited our work to the inspection of trees.

My message to you should, therefore, really be of more importance, as it is evident that the matter of protecting, perhaps one part of the County against another, or one part of the State against another part, will be more or less in your hands, and you can warn the farmers and advise them. In the case of the Irish potato and the cotton boll weevil, a great deal can be done. I believe the public is informed as to the boll weevil. Of course there would be many difficulties in the way of inspecting food crops, here in the State, that are shipped from one part to another. Take, for instance, the Irish potato. Being a food crop it would be a difficult matter to devise a satisfactory rule, when potatoes are permitted to be shipped as food. There are a great many difficulties. As I stated, I just want to bring the subject before you, and will not detain you longer.

In your work, if you come to things that you think should be brought to our attention, send them in to us, and we will try to help you.

LEGUMES

E. S. Pace

The legumes form a lot of plants that are peculiar in that they have formed a partnership with a group of bacteria. In this partnership the legumes are host plants; the bacteria gain entrance to the roots of the plants, live on the sap found there and cause swelling or nodules to form on the roots. In return for the sap taken from the plant, the bacteria gather nitrogen from the air contained in the spaces of the soil. This nitrogen is taken into the nodules, part of it goes to the plant, and part of it, when the root decays, goes into the soil and is used by the following crops.

Nitrogen makes up about four-fifths of the air we breathe. This nitrogen is the same element for which we pay twenty cents a pound in commercial fertilizer. Over each acre of ground, it has been calculated, there are about seventy million pounds of nitrogen. This, at twenty cents a pound, amounts to fourteen million dollars. When a farmer buys an acre of ground all of this is his and it only remains for him to grow the legumes and get it as it is needed by the crops grown on the land. Through the nodules on the roots of the legumes it is possible for each farmer to locate on his farm millions of fertilizer factories to run as long as the host plant lives, and which have no operating expenses. A good crop of velvet beans, cowpeas, crimson clover, or beggarweed, plowed under, adds as much nitrogen per acre as would be obtained from one-half to one ton of cotton-seed meal. When these crops are plowed under, the soil is not only benefited by the nitrogen thus obtained, but also by the vegetable matter so badly needed.

While there are numbers of legumes which can and should be grown in this State, I will confine myself to three with which I think we should become better acquainted. These three are lespedeza, burr clover, and crimson clover.

LESPEDEZA

Lespedeza has been in the United States for something over sixty years, and is now found throughout a large part of the country. While it has been recognized from the start as a good pasture and hay crop, it has been only a few years since its use in regular farm practice began. It has proven to be a very valuable crop to follow oats. The cowpea has been the crop most generally used to follow oats, but there are several reasons why lespedeza is better. One advantage lespedeza has, is that it is sown at a time when other farm work is not very pressing, as it usually is in the summer when cowpeas must be gotten in. The cost per acre of the lespedeza seed is less than of cowpeas, and cost of seeding is very much less. The lespedeza is free from disease. When used for hay, the quality is much better than that made of cowpeas and it is very much easier to cure.

The time for sowing lespedeza is in February or early in March. Sow the seed at the rate of a bushel to an acre on the growing oats. Scratch in with a weeder, or use a drag harrow with the teeth set back at an angle of about forty-five degrees. This will not only get the seed in, but will also give the oats a good cultivation. If nitrate of soda is to be applied to the oats, it can be put in at the same time. The

oats are cut off at the regular time, and the lespedeza used as is seen fit. Very frequently an early cutting of hay is gotten, and the lespedeza allowed to reseed the ground for a second year's crop.

BURR CLOVER

Burr clover is a winter and spring growing annual. It belongs to the same family as alfalfa. Being a legume and growing at the time of year it does, burr clover is a very valuable crop. It gives a large amount of good grazing, and makes a good combination with Bermuda grass. Until the seed is more plentiful it will hardly be used very extensively in regular crop rotations. The seeds are sown in the burr during August or September, and where it is intended to get a stand the first year four bushels to the acre should be used. Where it is only intended to get a start in pastures, a bushel to the acre or less can be grown. It is advisable for each farmer to select a piece of rich land, sow the burrs thick, and fence off for a seed patch. Very frequently from 150 to 200 bushels of seed are produced to the acre. The seed should be bought only in the burrs, as the cleaned burr clover seed on the market is a variety not so well suited to our conditions. Care should be used in sowing the seed not to get them covered too deeply. If they are to be sown on ground that has been freshly plowed, a roller or some implement to pack the surface should be used before the seed is sown. When they are sown early good results may be obtained by sowing on Bermuda sod, and giving no other treatment.

CRIMSON CLOVER

Crimson clover is one of the best winter cover crops and soil builders that we have. It should prove a success on all soil types when the drainage is good. However, unless the proper nitrogen-gathering bacteria are present, the cover will be a failure. The bacteria that live on the roots of crimson clover are the same that are found on white, red, or Carolina clover. So when Crimson clover is sown for the first time, a ton of soil from where one of these clovers has grown should be broadcasted on each acre. If this soil is not available, artificial inoculation can be used. In any case the inoculating material should be harrowed in at once. The best time for seeding is probably during the latter part of October. The better the seed-bed that is prepared, the better the results will be; but good results are had from sowing the seed in clean cotton or corn middles, and harrowing in

with some form of harrow. The seed should be sown at the rate of twenty pounds to the acre. Every farmer should prepare to get in at least an acre of crimson clover this fall, so that from this small plot he can get soil to inoculate a larger area the following season.

DISCUSSION

J. C. SMITH. I ordered a bushel of burr clover seed last winter, and sowed it on Bermuda. I did not get a good stand; possibly my stand was a third or fourth stand, but now it is bunching out. Mr. P. W. Smith has a plot of clover that is doing well. I have seen it.

S. J. MCCULLY. I have tried Crimson Clover and inoculated the seed. It was planted too near the house and the chickens have been on it, but it is still growing nicely. I have a fourth acre, and sowed five pounds of seed. The Department advised me to test it, inoculating some of it, and leaving some. There seems to be no difference in the two plots. I tried last fall to get the burr clover, and ten men had promised to test it, but I cannot get seed at any price. This fall, I guarantee you that we will have a number of demonstrations with it. Mr. Pace, I think, says to run a furrow every four feet. The Government, I think, says to run a cutaway harrow and sow the seed broadcast and leave it alone. A plot was tried at Dunnellon; it was sowed with rye. The man cannot tell the value of it, as his calf has been on it all winter, so of course, he does not know its value.

G. W. BELSER. I had an acre of clover last year that did fine.

M. C. GARDNER. I have two crimson clover demonstrations, one of an acre, the other half an acre, and some seems to be doing fine. I did not inoculate it. I got some inoculating material from a company in New Jersey, and in spots this is looking fine now. I have an acre of vetch that, two or three weeks ago, which was the last time I saw it, was doing fine and spreading out nicely.

A. W. TURNER. I have four demonstrations of hairy vetch, that was inoculated with material from the Department. It does not look good.

I. E. SOAR. I have two demonstrations of crimson clover. A few weeks ago I went over one and noticed that in some places it was doing well, but in others it was not so good. Wherever the inoculation was, it was doing well, but where there was poor inoculation or none at all, it was no good. The inoculation did best where peanuts were grown on the land and pigs put on it, and where other feed had been thrown in to them. In such places the land was rich in humus, and it was four or five times as good as anywhere else. Rabbits had been eating quite a bit of it.

M. C. GARDNER. I had an alfalfa demonstration on land limed with about 1,500 pounds to the acre of ground lime rock, and one acre had 400 pounds additional of the burnt lime. I noticed in that field that there were little low stubbles about a half foot high with very long roots and lots of nodules on them in places, while in other places the roots had gone into the ground but at the surface it seems to be dying away. Some places are still green, but others are dead.

J. D. BROWN. I have an inoculated hairy vetch demonstration planted with oats, and have a good stand. I used the Farmogerm. There were two ten-feet-square plots that grew very nicely with the oats and did fine. The rest died out. I followed directions for inoculation very carefully.

(Here Mr. Savely explained that much care must be taken with the cultures for inoculation or they may not be strong and would not do much good.)

G. W. BELSER. I have two demonstrations with alfalfa, and would like to speak of them. I do not know whether all our agents are pressing this or not, but we are simply carried away with it over in Jackson County. One man had six acres which he cut four times, getting a ton to the acre each time. Last fall he planted four more, making a total of ten acres this year. The soil contained lime and is rich soil. I had another demonstrator to put in two acres last winter. We have a fine stand and it was limed, fertilized, and the seed inoculated, and it is doing well. There are many people in the County who will plant it this year.

P. H. ROLFS. I was glad to hear that, for by the time the report reached Alachua County it was multipled a great deal and the yield was ten tons per acre. Several years ago it was found that these legumes, such as we have been discussing, were in many cases quite successful and promising, that is, on those lands that were well drained, in a good agricultural condition, and had plenty of lime, and in pursuing the studies farther we found a number of these legumes did much better on a limy soil, the soil that raised the best crop of peanuts. Some of them gave negative results on flat woods lands, while others gave negative results on the higher and dryer land. For instance, take the lespedeza; it liked a flat woods condition, and there are few places on the rolling pine lands where it makes a success. Alfalfa, on the other hand, needs a rolling pine land to approach a sucess. The burr clover was found near the sea where there was lots of ballast rock and lime, and it was growing nicely; but when tried farther away from the bay on high land there was nothing came of it and the plants died.

Now I think one of the best lines for investigation is these legumes. We want more crops that will give grazing in the winter time. These legumes come in and give feed and nitrogen to the soil that other crops we already have do not, so we want to study their production. We know that formerly red clover would not grow in Dakota, but now large fields of clover grow there and we get large quantities of seed from there, which shows that where formerly it would not grow, it now grows abundantly, and we know this is so with other crops. Soil well supplied with lime is the best because the nodule-forming bacteria prefer such a soil.

M. C. GARDNER. Can we pasture alfalfa in winter?

A. Yes, it does all the better for being pastured.

F. P. HENDERSON. I have just gotten a book that says a great deal about the yellow clover, or what is called "hop clover." They say it makes two tons per acre in Florida.

P. H. ROLFS. Melilotus or sweet clover grows around St. Augustine spontaneously; also in many other places in Florida. It is not generally relished by cattle. It makes a good hay. What we need most is a legume for the winter that will act as a soil builder and a cover crop at the same time.

BEEF CATTLE IN FLORIDA

C. L. WILLOUGHBY

The question of live stock production is commanding very general interest in America, and it is a subject

Fig. 4.—Dr. Bystra's herd of grade Herefords.

that will grow upon us every year. The great needs of the South are diversification of crops, live stock and soil fertility, and the more we can learn on these topics and advise the people rightly, the greater will be the prosperity of the entire country and the success of the demonstration work.

There are only a few basic lines of work that have produced wealth in Florida. These are the lumber interests, the phosphate industry, citrus fruits, truck crops, and live stock. The lumber industry is almost extinct, phosphate mining is limited by the deposits in the State, while the prices of fruit and vegetables are rather variable. But we find that demand and prices for live stock are increasing rapidly, and the supply is diminishing almost as fast. It, therefore, seems evident that there is more certain prospect of good profit in live stock work than in many other lines of agriculture. The price of beef is not likely to fall, but on the contrary will probably increase somewhat for the next 20 years.

ADVANTAGES OF LIVE STOCK

In studying the opportunities for live stock in Florida, we find that the State has many natural advantages over other sections of the country for such work, and only one real disadvantage, the cattle tick, which is, after all, an imported trouble.

On the question of lands, there are many thousands of acres in the State that are well suited for range and pastures, which will probably not be needed for more intensive farming operations for scores of years. Most of these lands will produce a number of the best pasture grasses and forage crops, and all of them are capable of improvement with legumes and the manure produced by the animals. These lands can be secured for prices ranging from $5 to $50 per acre, or leased for a very small sum.

Statistics of the last census show that there are nearly 1,000,000 cattle in the State of Florida, while the population of the State is only 750,000 people. This gives a ratio of slightly more than one head of cattle for every citizen of the State, which is larger than the proportion for the entire area of the United States, this being only six-tenths of one head on the average for the total population. We are, therefore, leading many other States in beef production at the present time. The great ranges of the West are being rapidly filled with holders of small

farms, and the days of the production of cheap beef in large quantities have evidently passed away.

FLORIDA CATTLE SOLD TO FEEDERS

Beef production on the average sized farm is being revived everywhere east of the Mississippi River. We find that other States are coming to Florida during the past year to secure cattle for feeding purposes, something like forty to fifty thousand head being shipped out to the feeding pens of Oklahoma, Missouri and Kansas during the past twelve months. This trade is likely to increase in numbers every year if we take proper care of it and furnish good stock, but the buyers will not be suited long with the present class of feeders which they have popularly termed "Florida Knot Heads." They will want better cattle, and will get them wherever they can, and will come to Florida for such material only as a last resort.

The question is pertinent if the feeders of Oklahoma can buy our "Knot Heads" and pay freight on them to their feeding yards, fatten them there and then sell them at a profit to the packing houses, how much profit could the Florida farmer make if he would keep these cattle in the State, fatten them on his own farm and sell them when finished to Florida packing houses? There is no question but what we could make more upon them than the Oklahoma feeder if we would adopt the same measures. But at the present time we are selling these cattle on foot at low prices and we are buying them back from the Western packing houses after they are killed and dressed. We pay the freight both ways on them and give the Oklahoma feeder a profit.

The greatest trouble with live stock in Florida, next to the cattle tick, is the poor quality of the animals we now have. The native Florida range cattle or piney woods stock are largely of Spanish descent, being small and poor to begin with, and have had very little improvement during the past century. One of the great reasons why more improved cattle have not been brought in from other sections is the loss from cattle tick and Texas fever, but we now have methods for controlling this trouble, and all who desire may introduce better cattle with comparative safety. There is not much difference in the amount of food consumed or the gains made by the scrubs as compared with the pure bred animal; but the latter will produce a carcass that contains more of the high priced cuts with less waste,

and will bring from 20 to 40 per cent. better prices on a discriminating market.

WHAT BREEDS

When people are ready to buy improved stock, the question of the best breed is always the first thing that occurs to them. This, as a matter of fact, is not so important a question as most people think, as any of the good breeds of beef cattle will do well when properly handled. It is more a question of individual preference of the owner and the conditions of soil, feeds, and markets that he will have.

SHORTHORNS

The Shorthorn cattle, or Durhams, as they are sometimes known, are more numerous than any other leading beef brand. They are large-framed animals with wide hips and good development of loin. The color is red and white or a mixture of these colors, called roan. They were called Shorthorns in England to distinguish them from a breed having much longer horns. They have been the pioneers in the beef breeding work of the world, and have formed the foundation for further improvement. They require rather large quantities of feed for their best growth and are not considered quite so good for grazing on scanty ranges as the Herefords. They are easier to secure than perhaps any other breed, and are held at moderate prices. They are more specially a beef animal, but some families of the breed have become famous as producers of milk and butter. In England they are still a popular breed for the farmer who wants both beef and milk.

One strain of the Shorthorns has been developed in America without any horns and these are called Polled Durhams. They have all the qualities of the Shorthorns and are easier to handle on account of absence of horns.

HEREFORDS

The Hereford cattle are probably the next most important breed. They are distinctly a beef breed and produce comparatively little milk, usually not more than enough to properly raise a calf. Their color is dark red or mahogany body color, with white faces and legs. They are frequently spoken of as the "White-Faced Cattle." They are comparatively large in size, although not quite so heavy as Shorthorns. They produce a very fine quality of beef but are inclined to be narrow in the hips and sometimes

put on fat in lumps. Their greatest quality for the South is their splendid grazing ability, as they can hustle over ranges and make a living on poor pastures where many other breeds would suffer severely. In breeding operations the Hereford bulls are very prepotent in transmitting the red body and white face to their offspring, even from scrub cows of all colors. Herefords are quite popular in the West at present, and a large proportion of the beef cattle marketed from the great feeding grounds show some of this blood. They are a little more difficult to buy, and prices are probably higher than for Shorthorns.

The Aberdeen Angus breed stands first in quality of beef in America. They are a medium-sized animal, being smaller than Herefords and Shorthorns, black in color, with soft fine hair, short legs and round body. They have no horns, and are sometimes called "Polled Angus." The head is very neat and refined. This breed is used more for the production of high class baby beef than any other, and it might be termed the highest stage of beef breeding. The meat from Angus cattle regularly brings the highest prices on the great stock markets of any breed in America. But on the other hand it requires more skill and experience for success with Aberdeen Angus than with other breeds. They are not very good grazers, being better adapted to pen and stall feeding than to grazing on thin pastures. They are also rather scarce and hard to buy, but some progress is being made in this line by the breed association holding occasional sales of these cattle in the South. It would probably be best to advise most of our people to try to work with Shorthorns or Herefords for a while first, and take up the Angus if they desire, after acquiring some experience.

OTHER BREEDS

Red Polled cattle are very good. They are large cattle with color and shape of body a good deal like the Shorthorns, and many of the cows are good milkers. They are rather scarce and difficult to secure.

The Devon is a good breed, with red color, somewhat smaller than any of the others. They are good grazers, and produce a fair quality of both beef and milk, but they are very scarce and are being gradually supplanted by the other breeds.

All the important breeds just mentioned were developed originally in England, but since coming to America have increased in large numbers and are fully equal to the

original stock of the Old Country. All the various breeds are represented in America by their own breeders associations, and the secretaries of these organizations are always willing to furnish information as to cattle, and names and addresses of breeders.

NATIVE CATTLE

Last, but not least, let us consider our native Florida cattle, whatever we may call them, Piney Woods, Scrubs, Knot Heads, etc. Sometimes we hear the Guinea mentioned. These were doubtless brought here by the Spaniards, and are very little better than the average scrub.

It is evident that the native, or scrub cow, is a fine example of "The survival of the fittest" under conditions prevalent on the ranges of Florida. They have been inbred so long, that, looking at it from one standpoint, we might call them a pure breed that has shown its fitness for its environment. Until we change the conditions for such cattle, it would be poor policy to say that we ought to do away with these native cattle and replace them at once with the pure breeds. If we can persuade our people to discriminate among the scrubs, and select those having the best beef form to be retained as breeding animals, we could get considerable improvement among them. If they would select cows with the square beef body, short legs and smooth heads, considerable uniformity and improvement could be secured.

GRADING-UP

Pure bred cattle need pure bred attention, and unless a man is ready with feeds and fences and the knowledge and experience necessary to handle fine animals properly, it would not pay him to go into the work by buying pure bred cattle of both sexes. The best advice for the average beef producer is going to be to urge him to buy a high grade (3-4, 7-8 or 15-16) or a pure-bred beef bull, and use him on the best selected native cows for grading up and improving the offspring. Such a bull can be used for breeding on one or two generations of his own heifer calves without serious injury from inbreeding. In fact, such a practice is the best method of improvement yet known in the history of live stock work, when conducted by a careful and observing man.

As the cattle improve in quality the methods of the farmer should also improve. He should grow more feeds for

the cattle on his own farm, provide better pastures and build dipping vats and fences. You have already heard from other speakers how the trouble of cattle ticks and Texas fever can be controlled by the dipping vat. This naturally demands having the cattle within reach, and shows the need of fences.

THE FENCE QUESTION

This question of fences for live stock is bound to come up sooner or later, and it is a very complicated problem; but if we can bring people to see that they can make more money by producing more of their own feeds, using better cattle, and controlling the ticks, then the matter of fences will solve itself, for they will readily see that it will pay them to fence their lands, whether they own or lease from other people.

A great many cattlemen tell us that the only way to make money is to let the cattle roam wild and loose on anybody's land, and get what feed they can from wire grass and swamp. Twice a year they try to collect what animals are left and brand the new ones, and send to the butcher the oldest and fattest. They seem to think that the money secured in this way cost them very little for expenses, and is like so much cash picked up in the road. It is impossible to figure just how much they lose by these methods as compared with taking better care of the stock and securing larger numbers, but a very conservative estimate would be that one-third of the total number born each year are lost from diseases, theft and other causes. In the last three years Texas fever has been getting worse, so that even the range cattlemen are not making much money with such loose methods. In my opinion this disease will likely increase in virulence so that it will actually compel cattlemen to completely revise these antiquated methods. This, of course, will be a blessing in disguise, but it will be hard for some of them.

Fencing should probably be done first with large areas of land and every community, or at least every county should have a cattle dipping vat. It would be well to try to secure a law for Florida that would permit local option on the fence question, so that a County, or even a militia district that has a majority of votes in favor of it, can put the law in operation without having to wait for the legislature to confirm the action.

FLORIDA LIVE STOCK ASSOCIATION

The Florida Live Stock Association is trying to help the industry by promoting the building of dipping vats and establishing live stock clubs or local associations in each County. We do not want this association to conflict with any other county association, and would be entirely willing to merge the live stock work into any general farm improvement club that the County Agents may organize. If we can induce these co-operative clubs to act together and purchase good breeding stock for the use of their members, it will be a fine thing for the State. The time will come when we will have our own packing plants in Florida, and quit shipping our stock away and buying it back from other States.

STUDIES ON LIVE STOCK

For anyone who cares to study the history and characteristics of the different breeds of beef cattle, I would like to recommend a few recent books along this line. One is called "Beginnings in Animal Husbandry" by Prof. C. S. Plumb, published by the Webb Co. of Minneapolis; another is entitled "Animal Husbandry for Schools" by Prof. M. W. Harper, published by the MacMillan Co. These are both excellent books for anyone beginning this study, or for pupils in the high schools in our State. They give a brief study of the important farm animals, and many of the principles of breeding, feeding and management. One of the best works that the County Agents could have in their library as a reference for all topics in animal husbandry would be the "Encyclopedia of Live Stock" by Wilcox Smith, published by the Orange Judd Co., price $3.50.

CATTLE BREEDERS.

Shorthorn Cattle.

Z. C. Chambliss, Ocala
J. R. Shuler, Bristol
A. L. Jackson, Gainesville
S. H. Gaitskill, McIntosh
Marion Farms, Ocala
Carson Bros., Kissimmee

Hereford Cattle.

N. A. Callison, Gainesville
Magnolia Farms, Muscogee
J. R. Shuler, Bristol
W. A. Sessoms, Bonifay

Jersey Cattle.

Aug. Van Epoel, Tampa
Miles Johnson, Tallahassee
E. H. Gould, Oneco
Jack Camp, Ocala
A. L. Vidal, Gainesville
J. C. Goode, Gainesville
C. H. Simpson, Milton
Wm. Edwards, Zellwood
R. C. Shaw, Quincy

Guernsey Cattle.

A. L. Daughtrey, Gainesville
J. S. Goode, Gainesville
C. L. Wiloughby, Gainesville

SWINE BREEDERS.

Berkshires.

Wm. Edwards, Zellwood
Oscar Williams, Muscogee
Richard C. Shaw, Quincy
W. A. Sessoms, Bonifay

Duroc Jersey.

W. B. Willett, Maitland
H. H. Whitworth, Ocala
J. C. Henry, Live Oak
C. H. Simpson, Milton
L. B. Thompson, Pensacola (R. No. 1)

Sheep Breeders.

Walker Bowers, Freeport
Dan King, Luanna
W. A. McCollum, Laurel Hill
Eugene Miller, Freeport
Alex. Steele, Point Washington
Hutch Cawthon, DeFuniak Springs
John McCollum, DeFuniak Springs
John McSween, DeFuniak Springs
Dyer & Daniels, Wetappo
W. M. Gist, McIntosh
Ridge & Gale, Belleview
B. B. Keep, Boardman
Geo. E. Meade, Cantonment

POULTRY BREEDERS.

J. D. Archie, Tampa
F. L. Bills, Crescent City
H. P. Bitting, Ocala
E. G. Brown, Lakeland
Mrs. Clarence Camp, Ocala
E. L. Carney, Ocala
Geo. L. Clemons, Ocala
W. H. Clifford, Lakeland
Mike Coward, Ona
Wm. Crouch, Punta Gorda
J. M. Douglass, Shady
D. D. Elliott, Lakeland
O. M. Gale, Belleview
— Gary, Ocala
Geo. Graves, Pensacola, R. No. 1
W. R. Hanis, Tampa
C. W. Hinsdale, Lakeland
F. J. Hoffman, Lakeland
W. T. Johnson, Tampa
Mrs. N. M. Jones, Bartow
Lakemont Poultry Farm, Winter Park
A. B. Lowe, Zona
C. J. Mishler, Anthony
R. T. Monroe, Ocala
John Parks, Palatka
C. G. Pearce, Arcadia
Rosamont Poultry Farm, St. Petersburg
W. M. Shockley, Lowell
A. H. Snyder, St. Petersburg
Geo. B. Stearns, Ocala
W. D. Wheeler, Griffin
P. W. Whiteside, Ocala
W. P. Woodworth, St. Petersburg
C. C. Woodworth, Tampa
Mrs. Lester Windsor, Winter Haven
Thos J. Rhodes, Hosford
Lackawanna Poultry Farm, Jacksonville
Chas. H. Simpson, Milton

DISCUSSION

C. K. McQuarrie. Would you recommend the Polled Angus cattle to Florida breeders?

Prof. Willoughby. Not until a man has had some experience with other beef breeds, or with good native cattle.

R. T. Kelley. We all know that fences are obliged to come, but the South Florida people are against them at present. I would like to have your judgment and advice as to how to proceed.

PROF. WILLOUGHBY. It is going to be a matter of patient education and trying to impress upon these people that it would be better for them and their pocket books to keep their own cattle controlled with fences. It will also be a matter of yielding to the rule of the majority when it comes to voting on the subject. Very frequently the people who do not want fences are the men who do not own land. Have they any right to let their cattle trespass on other people's land. without the consent of the owner? Statistics show that nearly 70 per cent. of the people of Florida come here from other States, and most of them are accustomed to fences for cattle, and if they will vote right they can control this subject without any trouble. Many of the native Florida people who are kicking against fences are inviting people from other States to come here and buy land. It would be very inconsistent, to say the least, to invite these people to Florida, sell them land, and then be allowed to continue grazing scrub cattle over these areas. There is no fairness in a scheme of this sort, and it will hurt the reputation of Florida to continue such methods much longer.

S. W. HIATT. I presume Mr. McQuarrie is not surprised to see me speak. He knows I am much enthused over this, for the reason that I had the opportunity to be brought up and raised in what is becoming the live stock section of the United States, and I know that we have a far greater chance here for development than in the North. I believe we need to put our attention into this, and for that reason I want to say something along the line of breeding up. I find in our County over 50 per cent. of the farmers have not been paying much attention to this, but now they are expecting to turn their attention more to the raising and feeding of live stock and the grading up of their cattle.

Now, as to fences. We all know that we, as Demonstration Agents, need to exercise care in going among these people; but I am giving to my people the necessity of grading up. I am trying to work on the people in a way that will make them see the necessity of grading up, and to get around the fence problem by co-operation and succeeding in getting the legislature to pass a law prohibiting inferior males from running at large. I think with this, we would get the fences. I am from near the Canada line, there is nothing allowed there but registered stock. One can keep others on his place, but he cannot allow them to run at large.

A. W. TURNER. I believe the fields should be fenced, and I have my land fenced.

PROF. WILLOUGHBY. The legislature, I think, should pass a law letting the counties have fence laws if the people want them. The question of allowing only pure bred males to run is like a law that some one wanted to pass not to let calves be killed. It would not work.

R. T. KELLEY. It seems to me that pure bred cattle will be protected by such a law.

PROF. WILLOUGHBY. I think as conditions now stand, there is little hope at present for many large breeding establishments for registered cattle to expect to make much money here, because too few farmers will pay a decent price for good stock.

H. E. SAVELY. I know what this fence law business means, because in my home in Mississippi I know what the law was when passed. It is a question the local people have to fight out. Now they have such a thing as a stock law in a beat. The County is divided into five beats and the beats are allowed to decide for themselves whether

they shall have the fence law or not. Well, when one beat got it, the thing naturally grew until now it covers practically the entire State. I believe if the legislature would allow every County or part of a County to tax itself to build a fence around itself, and have a law of this kind in that particular part, it would be one of the greatest things, and it will be bound to spread. This would be a good step in the right direction for the agents to take up. It is good to combine it with the tick eradication law also. This is one of the things that it would be well for you to do, and present it to the legislature. If certain communities want it, why should they be prevented from having it. When one beat got this law it proved a disadvantage to the other beats and in a pretty short time the others will come in. It should not be forced on the entire State at once.

G. W. Belser. I think that suggestion is right. This thing, if started, is bound to grow. We will never have any good stock until we have laws governing it. The number of cattle in the county I was raised in is four times as large now as when begun. The "beats" usually measure ten miles square. I believe local option should be the thing.

Prof. Willoughby. That is a matter of education. To eliminate the scrubs, both man and beast, we must keep everlastingly at it. Many people are now fencing large areas with miles of fences, simply to prevent loss in the woods, from Texas fever and other causes. Probably by education, we can get up to it gradually.

E. W. Turner. Take Mr. ————, for instance, he does not own five acres of land, but he has several hundred head of cattle. In my own County I find the people there are afraid to express themselves, but there are a large majority of the stock owners who do not want the fence law.

M. C. Gardner. The people are all afraid to say what they think and we agents are all handicapped. We cannot go out and express ourselves. If we do we are likely to make enemies.

H. E. Savely. You could do this. If they pass a law allowing certain parts of it, you could say: "I am not saying one way or the other, and if the majority of the people want it they should have it. If they do not want it, I do not think they should be made to have it, but I am with the majority in either view." Personally, however, I would say that I am for it.

GRAZING CROPS FOR FLORIDA

T. Z. Atkeson

We have had so much talk about the different legumes and crops that I do not feel it is necessary for me to go deeply into that subject. I would like to say, however, that the subject of grazing crops, taken in connection with live stock industry, is one of the things that most pleases the northern man who comes here. When a man is figuring on changing his location, particularly southward, he begins to study literature, and often in this literature nothing whatever is said about cattle. He studies the situation over, gets bulletins and reads that where he has possibly been raising red clover and alfalfa, that here it is possible

for him to raise quite a number of legumes. Possibly he might prefer to raise alfalfa, many do, but after he begins to study the subject he becomes more and more firmly convinced that this is a magnificent live stock country, and we know it is, but the only objection is the cattle tick; that he never reads anything about.

Now I think it is a mistake on the part of the land companies, or anyone else, not to take this up with the people. The land companies, of course, put the bright side of the thing to the people and they do not realize the effect of the cattle tick in the South. So far as grazing crops are concerned, in themselves, it is so wide a field that we cannot possibly take all of them up on a short talk of this kind.

BURR CLOVER

In regard to burr clover, I will say last season, or in 1912, I was in Southern Alabama on the Florida line in the Demonstration work, and I will give you some reasons why the supply of seed was so short. I, for one, managed to get about twenty acres planted in my County, and we were instructed by the State Agent to see to it that the plots were all on good land under the best possible condition, and these 22 or 23 acres that we had there, all grew off and simply did fine. This was burr clover. Last season, I understand that in the fall there were over 1,000 acres planted in that County alone, and this was duplicated in nearly every part of the State, at least the statistics show that there were 75,000 acres of it in the State. My experience was like that of nearly all the other Counties, I think. Now, then, the thing that appeals most to the man in the live stock business, is the green crop to pasture on, and he can have it if he will only take a little extra time and trouble.

ROTATION AND SUCCESSION OF CROPS

I plant for hogs, but you will find that with some little change it will be all right for cattle. Now these crops, maturing, say about the first of September, you will plant soy beans and peanuts (the old time Spanish variety, that is, the small one.) The Valencia, the new one introduced by the U. S. Department of Agriculture, is an early maturing peanut that matures in about 120 days, making as many bushels, or more, to the acre than the old one, making a larger nut, and making quite a better crop of hay. Soy beans, two varieties of peanuts, and corn, fill the period from the first of July until the first of October, and we will call this the September period.

Begin the first of October and we have a regular fattening crop for hogs that we consider here as most important, that is the North Carolina peanut. To supplement this we have corn. This will last from the first of October until the 1st or 15th of January. We have corn, rape, vetch, rye, oats and barley. I have skipped some of those that you might think good.

In January when the peanuts are about exhausted, we have one crop that I would say is chufas. Personally, I do not bother with chufas. I think they take too long a time in the ground, but they are a pretty good crop, and one that will suggest itself in rotation. We can have rape, vetch and the two clovers, burr and crimson, oats, rye and barley. This period of time, beginning about the 15th of January, will last until about the 1st of May.

Now there is always just a little bare place in whatever rotation we have that is hard to fill, and this extends from the 1st of May until about the 15th of June. It is a little too late for the winter crops and a little too early for the spring crops to be ready for grazing. I have never found anything like Bermuda grass for pasturing in this bare spot. I do not know how many of you have these Bermuda pastures, but you cannot get away from Bermuda in this country. The very fact that Bermuda is as tenacious as it is and because it is hard to get rid of when once established, in itself presupposes that that grass is bound to be a good pasture grass. Comparative tests have been carried on in several different States regarding the value of Bermuda pastures and blue grass pasture as feeds. It has been found that an acre of Bermuda will carry more animals and keep them in better shape than an acre of blue grass. We have often heard of those wonderful blue grass pastures that have given to those States of Kentucky, Virginia, etc., such wealth; but if we study our possibilities, we will see that we have just as good a chance of wealth from our Bermuda pastures.

Now here is a crop that I want to mention as valuable, and I expect a laugh when I do. It is citrons. They grow wild, and we have never paid this much attention, but in some of the northern and southern States, in Tennessee and Missouri, those fellows have to plant them and fertilize them carefully. They have been worked with by the Experiment Stations there, and have been decided to be one of the best feeds for winter that they can find. Here in Florida it requires no special attention to grow or to keep citrons. They will keep a long time, so that if there is

any feeding value in these citrons it stands to reason that it should be a pretty good crop to grow. The Missouri and Tennessee Stations have classed them about with pumpkins, not so good as corn silage, but about one-half as valuable. In other words, a ton of corn silage is about as good as two tons of citrons, but where a farmer has to figure on building a silo, and buying the machinery that is necessary to prepare the silage and get it into the silo, I think there might be a possibility for the citron on the average farm that would be very promising.

I just wanted to bring this to your attention, for it does look like a joke, but it is not as much of a joke as you might think. One of my demonstrators has had them. I went to his field last spring with him and we were looking along over the corn field and the citrons were about the best I ever saw; they were growing everywhere. He wanted to plow these up and throw them away. I asked him to leave those in the rows and try a little feeding experiment with them. He decided to try them. He asked me if they were really of value, and I told him I did not know but it would be good to try them anyway. So he gathered his corn when the time came, but did not take time to gather the citrons, for he knew they would stay there all right. Then he opened his gate and turned the cattle and hogs in there. He told me, two weeks later when he had a little time he decided to go in and haul the citrons out, and he says that when he got in there, he could not find a wagon load of them on the twenty acres. The cattle and hogs had carried on the experiment by themselves.

Now I have simply indicated these crops that can be grown at different seasons of the year to carry on a crop rotation.

CORN AND PEANUTS

One other thing. I would say during that period from July 15th to October, I mentioned corn in connection with peanuts. I believe it best to plant them together, corn with peanuts down the row. I plant from two to four acres, and plant them in a succession, planting every ten days or two weeks, as many times as I think necessary. I do not gather these, but turn the hogs in on them. You will find after the first day that you are about as blue as a man can be. The first day the hogs will root out every peanut and put every ear of corn to the ground, but there will really be no loss, for they come along and gather them up. There is practically no loss in the end. You must use the

old Spanish peanuts for this, for they mature at the same time as the corn. There is one objection to the Spanish peanuts; that is, they sprout almost immediately after maturing, so you cannot plant more than a little at a time, for they would sprout and you would lose them. It is better to make your patches small, depending on the number of hogs you have; and run your hogs on the different patches as they mature, and in this way save each patch by feeding it when it is ready.

DISCUSSION

A. P. SPENCER. I would like to ask why no one has emphasized sorghum. It seems to me this is one of the important crops and one of the best things we have. Prof. Gray seems to have fed mature sorghum.

T. Z. ATKESON. That is a proposition. All of Dan Gray's experiments have been with mature sorghum. The mature sorghum is not what it ought to be. It would be fine for the hog if he could get all of it. But the hog gets a stalk of the sorghum in his mouth and commences to chew it, and the juice runs out both ends and is lost. So far as sorghum is concerned, it is one crop that I have never had any experience with; and so far as I know Prof. Gray has not experimented with it except in the mature stage. I should judge that where a man did not have Bermuda pasture it would be a good thing to try sorghum, and possibly it might pay him.

H. E. SAVELY. If you plant cowpeas very thick you can kill Bermuda anywhere; and if you plant velvet beans very thick there, you will get a good crop. Shade, if thick enough, will always kill Bermuda. It is bound to do so, and in one year's time.

A. P. SPENCER. Plant cowpeas with sorghum. Mr. Atkeson says mature sorghum is not good for feeding, but here at the Station farm we get over 32 bushels of seed from the sorghum per acre. I would suggest planting sorghum thick, and I have seen some that made the finest kind of hog feed if planted thick and pastured off two feet high. These green feeds are mainly for the succulence that a green crop will supply.

The big trouble in this State is between the middle of March and along into May. We want something for this period. In South Florida last year I saw acres and acres of sweet potatoes in the ground until along in April; and I think this is a good thing for the spring feeding. If the ground is very wet or the potatoes valuable, it is a different proposition entirely.

T. Z. ATKESON. I would like to say that there is a good deal more imagination connected with this Bermuda proposition than anything else. I have been farming on land that has a good deal of Bermuda on it and my experience has been that in plowing with a one-horse plow it is lifted around these patches but with a two horse plow you will have no trouble.

A. P. SPENCER. We have always recommended the use of Japanese cane, and the proper use of it, but I have had it thrown at me time and again that people have turned young pigs into the Japanese cane patch and that they have simply died right off. I have never seen little pigs killed by it and I would like to hear from you gentlemen. Have you seen this happen? I have about come to the conclusion that it is a case of starvation rather than anything else.

S. J. McCully. When Japanese cane is in a succulent condition little pigs can grow on it and do well without any loss. I think after it is old they are not able to handle it.

J. M. Scott. The pigs too often get only the watery juice, and that will not keep them alive. They should have some other feed along with it.

O. L. Mizell. Mr. Atkeson spoke of that bare season in the spring. Many are not situated as I am. I think one of the best things for hog feeding after velvet beans is millet. I have tried that, and it does splendid, and withstands pasturing, and is good for all kinds of stock. It should be encouraged to grow more than it is.

M. C. Gardner. I remember that three or four years ago I had three or four acres of sweet potatoes. My hogs had been killed in the fall with cholera. So the next spring about May, and after I had turned the land in December, there were potatoes all over the ground. The next spring they sprouted. I left them there just for the young pigs, and they did exceptionally well.

FORAGE CROPS

J. M. Scott

There is little use talking about forage crops unless there is some need for them. Under the present conditions there is a greater need for the growing of forage crops in Florida than there has been in the past.

There is not much demand for forage crops unless we have live stock to feed them to. During the past there has been an idea, entirely too common with most of our farmers, that here in Florida it was not necessary to go to the expense of providing winter forage for our live stock. This, however, is a false notion that we have gotten from somewhere; and the sooner we forget it, the better it will be for our live stock.

Any country in which an abundance of good, nutritious forage can be grown, ought to be a good live-stock country. It is quite important in a forage-growing region to have an abundance of live stock, for the reason that live stock on the farm furnishes the best market for disposing of our forage crops. Most of these crops are bulky. Hence, shipping to a distant market is not advisable. But by feeding them to live stock of some kind, we convert them into a more marketable product, producing a larger profit, and at the same time leave at home an abundance of material that adds materially to the fertility of our soils. For instance: With every $100 worth of beggarweed hay sold from the farm, as hay, there goes $92.38 worth of fertilizer. With every $100 worth of crab grass hay sold from the farms, as hay, there goes $40.67 worth of fertility. With every $100 worth of corn sold from the farm there goes $31.06 worth of fertility. Is it any wonder then that our farm lands grow poorer and poorer every year?

We hear a good deal about "Crop Rotation," and it is a very important topic, which should be talked in season and out of season. But along with "Crop Rotation" there is another very important topic, and that is how to dispose of these crops to the best advantage. We have called your attention to the fact that if our forage crops are sold from the farm in their raw form, a large amount of fertility

Fig. 5.—Japanese Cane in Shock.

is sold from the farm at food prices, and this fertility must be returned the following year in the form of commercial fertilizer. The most economical way of disposing of forage crops on the farm would be to make them into either beef, pork, or dairy or poultry products on the farm, and then send them to market. The reason for making this suggestion is that with every $100 worth of beef sold from the farm only $14.26 worth of fertility is sold; with every $100 worth of pork sold from the farm only $6.16 worth of fertility is sold. With every $100 worth of milk sold only $2.82 worth of fertility is sold; with every $100 worth of cream sold only 83c worth of fertility is sold, and with every $100 worth of butter sold from the farm only 10c worth of fertility is sent away. This, of course, means that the fertilizer produced by the animals that consume the forage crops must be well taken care of and applied to the land in good condition. I refer you to Press Bulletin No.

191, of the Florida Experiment Station, for information how good forage crops will improve our native cattle.

In suggesting crops to grow it is difficult to say just which one should be placed at the head of the list. However, Japanese cane, sorghum and corn are without doubt three of our best forage crops. Just which of these will do best for you will depend on the character of your land and the way in which they are to be used.

JAPANESE CANE

Among the first forage crops that I wish to mention is Japanese cane. Perhaps all in the audience would not agree with me that Japanese cane should have first place, but some one crop must be placed first, and I place Japanese cane first because I believe it will yield more per acre than will any of our other forage crops here in Florida. I do not wish any in the audience to think that my arrangement of the crops is the best for all farmers or all sections of the State, but I would suggest that each man select those crops from this list that he considers best for his particular section of the State.

Japanese cane can be used in a variety of ways; as a pasture crop, as a soiling crop, or for silage, and it can be cut and cured and fed out during the winter and early spring as dry forage.

This crop produces no grain or seed. Hence in feeding it some allowance must be made for this, and a sufficient amount of grain fed in addition to the forage to compensate for any corn or sorghum that might be fed in corn forage or sorghum forage. For instance, it would hardly be fair to compare results of feeding a ton of Japanese cane silage, with a ton of corn silage made from corn that would yield 30 or 40 bushels of grain per acre. To make these feeds comparable, a sufficient amount of corn or other grain should be added to the Japanese cane silage to equal the corn in the corn silage. We have heard a number of complaints from farmers who have been feeding Japanese cane silage, and I believe most of the complaints are because that they made no allowance for the grain that may be in other forms of silage fed.

Perhaps the most economical way to use Japanese cane is as silage. With this method there is less waste of feed. If used as a pasture crop there is considerable waste. Cattle tramp a good deal of it under foot. Then if it is

left standing in the field and is injured by frost a number of times, the feeding value is reduced somewhat, though just how much I cannot tell. If it cannot be made into silage, perhaps the next best method would be to cut it and place it in shocks, and let it cure; and then feed it out during the winter when feed is needed. The shocks should be made of fairly good size, and as soon as they are completed they should be tied with a good heavy cord. We have found lath cord very satisfactory for this purpose, because it contains a good deal of tar and resin, hence the grasshoppers and crickets are not so likely to cut it in two. The shocks should be tied very securely and as near the top as possible, so as to make the top shed water. It might also be of advantage to run the Japanese cane through a cutter just before feeding. Some three or four years ago we cured a considerable quantity of Japanese cane hay, and placed it in the barn in November and December. Some of it was not fed out until the next June and July. When this was run through the cutter, there was still enough moisture in the cane to moisten nearly the entire mass, and only a small amount of it had soured.

Japanese cane does well on nearly all kinds of soil, but like other forage crops it does best on the best grades of soil. The better grade of soil, such as the hammock soil, will no doubt produce the heaviest yield per acre; and perhaps the high pine sandy soil will produce the smallest yield per acre. Japanese cane will also grow on rather wet land, although we would not advocate planting it very extensively on that class of soil.

You will find that Japanese cane, like a good many other crops, likes an abundance of lime in the soil. In our fertilizer experiments conducted some time ago we found that an application of one ton of ground limestone increased the yield per acre by about ten tons of green material. It is rather difficult to say just what is the best formula to use in fertilizing cane, but I believe that the important point in fertilizing is to give an abundance of ammonia, so as to induce a strong rank healthy growth.

SORGHUM

Sorghum is another good forage crop for Florida, and there are quite a number of varieties to choose from. Perhaps the three best varieties for Florida would be the Gooseneck, Sumach and Orange. These three mature about the same time, and the yield per acre of forage is about the

same for the three varieties. For an earlier forage crop, perhaps the Early Amber should be selected. This will mature and ripen seed perhaps two weeks earlier than the other varieties mentioned. The sorghums can be planted almost any time from February or early March until the first of August. If an early soiling crop is desired it would be well to select the Early Amber. Sorghum planted the first of March ought to produce at least two good crops, and under favorable conditions three crops, during the season; that is, as soon as the early crop is ripe it should be cut, the stubble fertilized and given good cultivation, and as soon as the second crop is ripe the stubble should again be fertilized and cultivated. In the northern and western parts of the State it would perhaps be inadvisable to always count on three crops during the year; but in the vicinity of Gainesville and southward, by planting early in the season, that is the latter part of February or early in March, three crops can be obtained. The first crop will be much heavier, and the third crop will be lightest in yield.

Sorghum can be used either as a dry forage crop or as silage. Sorghum will also be found a good crop to grow as a grain crop. The yield per acre of grain on the average sandy pine land will be found to be equal to, or better than, that of corn grown on the same class of land. Some difficulty may be encountered in curing the seed of the first and second crop on account of the excessive moisture at that time of the year; but if the heads are cut when perfectly dry and spread in an open pen or shed they will cure out and dry without becoming moldy. Care should be taken when they are first placed in the barn not to put them in too large piles until they become well dried. If the crop is to be cut for forage, it should be harvested about the time the seed is in the dough stage. Like Japanese cane, sorghum grows on almost any class of land, but it does better and gives better results on the better grade of land. To obtain the most satisfactory yields, sorghum should be well fertilized and given good cultivation.

CORN

Each year corn is becoming of more importance in Florida, until last year the corn crop was second to that of citrus. However, there is not enough attention given to the saving of the forage. The forage is of considerable importance and is a valuable feed. Too many farmers have been wasting their time pulling fodder when it would have

been much better to have saved the entire crop. When the fodder is pulled, there is no doubt of its being a good feed; but it is very expensive. It will cost about $20 a ton by the time it is ready to feed, while if the entire crop is harvested as a forage crop it can be done much cheaper and more feed can be saved. In ordinary seasons, the corn can be cut and shocked and cured in this way. Of course in real wet rainy seasons there is more or less loss from mildew and mold, but if the shocks are well built and well tied up, the corn will keep quite satisfactorily. Or caps can be made by using ordinary unbleached muslin dipped in raw linseed oil and then wrung out. This will make them more or less waterproof, and they will last for several years, thus making a cheap covering to protect the fodder.

OATS

Perhaps oats should be considered as a hay crop more than as a forage crop, but hay and forage are so closely related to each other that we will at this time speak of oats as a forage crop. Oats should be planted in the latter part of October or early in November in a well-prepared seed-bed. They should also be given a liberal application of fertilizer to produce a strong healthy growth; and if we have favorable weather during the winter they should produce a satisfactory yield of hay. They should be cut for hay when the grain is in the dough stage.

Just what variety of oats should be sown is rather a hard thing to say. Some prefer the Appler Oat, while others think the Burt Turf Oat is best, and still others prefer other varieties. The yield of hay that can be obtained per acre from oats will vary considerably, depending on the character of the soil, how they have been fertilized, and also on climatic conditions.

GERMAN MILLET

German millet is another good hay crop that does well in Florida, and that makes a good quality of hay for the feeding of cattle; but it is not so good for the feeding of horses and mules. It is also a good crop to use in rotation following oats. Land that has grown a crop of oats during the winter can be plowed and sown to German millet as soon as the oats are harvested in the spring. The yield of millet hay per acre would be about the same as that for oats. There is one important point that should be kept in mind in the growing of millet for hay, and this is that it should be harvested just about the time the seed heads be-

gin to show in the field. If allowed to stand until the seed is ripe, it will make a very poor quality of hay.

CRABGRASS

Crabgrass is a volunteer crop in most fields, but it is one of the most important hay crops in the State. It makes a good quality of hay when harvested at the proper time and well cured. It will require no cultivation and no fertilizer, since it comes as a volunteer crop after the spring and summer vegetables, or after any other spring or summer crop has been harvested. The yield per acre of crabgrass hay will depend upon the quality of the soil on which it is grown, and also the amount of fertilizer applied to the previous crop. Where crabgrass is following a vegetable crop it is not uncommon to get as much as two tons of hay to the acre and even more in some cases.

NATAL GRASS

This is a grass that is perhaps not as well known over the entire State as it should be, especially in the central and southern parts. It does better in this part of the State than in the northern and western part. We cannot at this time recommend it as being a satisfactory crop for the northern and western parts; but for central and southern Florida on the dry sandy soils it is one of the best hay crops we have. In fact it is such a persistent grower in Lake County that they claim there that it will kill out Bermuda grass. This is probably true on the very sandy soils, but I do not believe it would be true on the heavier clay soil. Like crabgrass hay, Natal grass comes in as a volunteer crop after the spring and summer crops have been removed. The yield of hay varies all the way from one ton to three or three and a half tons per acre of cured hay. In feeding value it is perhaps a little better than the best timothy. If the ground is not already seeded to Natal grass, the seed should be sown during the months of April and May whenever there is sufficient moisture to ensure germination. Sow the seed at the rate of eight to ten pounds per acre. The seed is very light and fluffy, and it will be found quite difficult to scatter it unless it be mixed with moist sand. When moist sand and the seed are mixed together, the seed can be scattered broadcast quite satisfactorily. Care should be taken not to make it too wet or it will not scatter well. Two or three cuttings can be obtained during the year.

RHODES GRASS

This is one of the most promising hay crops we have at the present time in the State. It is not yet grown on any large area, but it has been tried in nearly all parts of the State and seems to be quite promising. Because the seed must be imported and is therefore rather expensive, it is difficult to get seed. The yield of hay per acre from this grass seems quite satisfactory. In feeding value it compares favorably with our other hay crops.

DISCUSSION

P. H. Rolfs. About Rhodes grass. The Experiment Station has followed this up and has planted some of it since 1909; but we should not get excited about the high yields we hear of. If we can average four or five tons on our best land it will be satisfactory. Those yields that have been spoken of are excessive and very extraordinary yields. If we can get as much as three or four tons per acre on the average flatwoods it ought to be satisfactory. Rhodes grass should be tried out on every farm, but we should not let our hopes run away with us. Let us get some trial plots of it in our own Counties before we advocate it strongly. It is apparently a good thing, but one that we want to go slowly with.

GROWING AND CURING HAY

W. E. Brown

I will mention only about three crops: the first we might call a forage crop, and now is the proper time to plant it. It is sorghum. There is a man in our County that plant 20 acres of sorghum every year, and while feeding this he says he saves $100 per month. It is one of the good crops I think that you can feed to good advantage.

The next is the peanut. We plant a great many cucumbers, cantaloupes and watermelons; and after those, we plant peanuts on that land. A great many of those are harvested for seed and thrashed out by peanut thrashers. That crop is sacked in large sacks, and the hay is baled and used on the farm and sold on the market. A better way would be to plant peanuts, and cut the crop with a mowing machine. You can get a better grade of hay than if you have the roots in it.

The next is a crop that is easily handled at the proper time and if planted at the proper time, it will come when it can easily be saved. It is the cowpea. It can be planted after watermelons and cantaloupes, which mature along in June. It should be planted in July. Cowpeas should be planted on well-prepared lands, in rows or else broadcast.

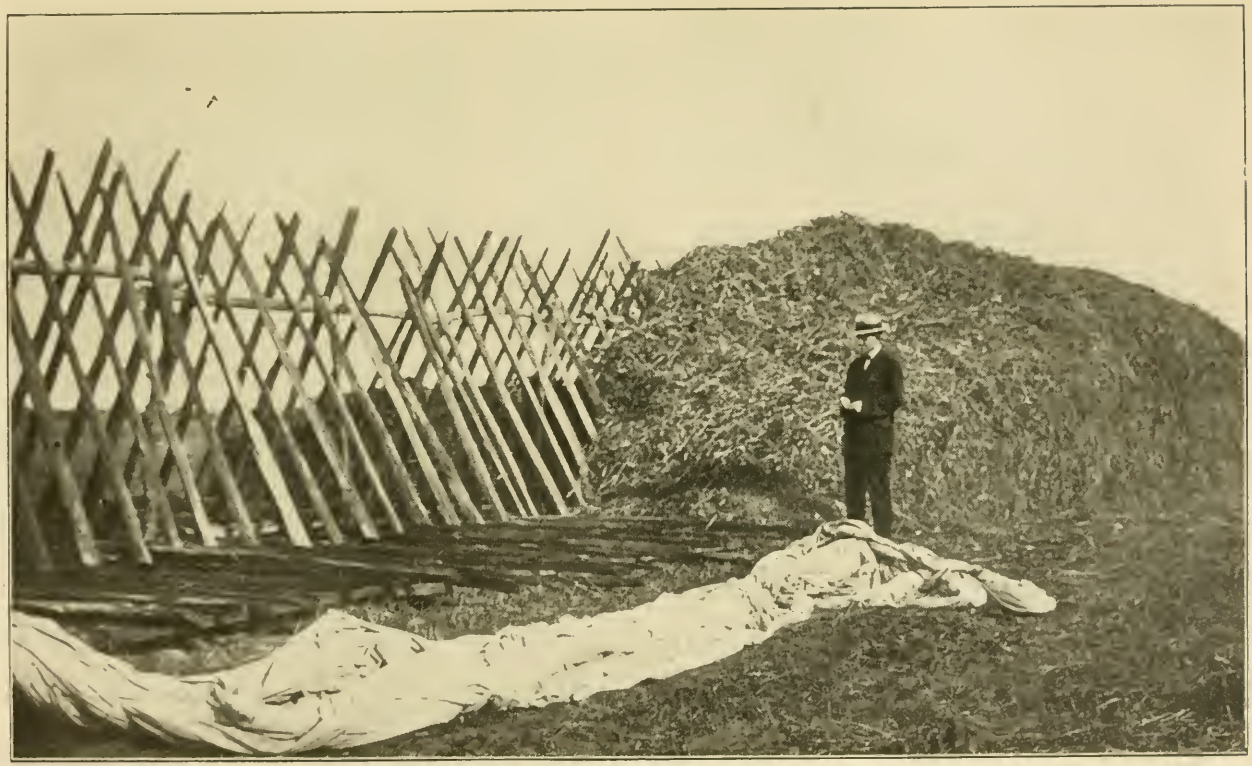

Fig. 6.—Means' method of curing Pea-vine Hay.

It is better to drill the cowpeas, and of course the next best thing would be to plant it in rows, so you can cultivate it. Cowpeas will be ready to cut along in October, at a time when you have good hay weather. The proper way to cut and cure pea vine hay is just after the dew has dried; or wait until noon or a little after and leave those vines until they wilt, and then the next day stir them and turn over. and the next day rake them up and put them in small cocks. I have seen some use different methods with poles. Sometimes they would do all right, and at other times they would not. I think the best way is just to let cowpea vines cure in the stack. When the vines are dry enough so there can be no water wrung from them, haul them into the barn and leave them there for six or eight weeks, when they can be baled. If it should rain, just leave them until they get dry on the top, then turn them over like you do when they are first cut and let them dry on that side. If those cocks get real wet, just leave them until they dry, then turn them over and let them dry again. Do not handle them any more than you have to, as it causes the leaves to fall. Cut for hay when there are many mature pods, as they make the best hay.

DISCUSSION

Q. Have you ever tried sowing cowpeas thick to make them grow tall?

W. E. BROWN. Yes, and you can always get good results. If you plant the Whippoorwill variety you will find they grow best, and are nice to cut. Plant in July.

Q. Will the spring pea make good hay?

W. E. BROWN. Yes, if you plant the bunch kind. If planted in the spring they mature during the wet season when it is difficult to put them up in good condition.

S. J. MCCULLY. Have you seen them cut in wet weather?

W. E. BROWN. Yes, I have seen them cut when they stood in water. I have seen peas planted after watermelons and cut at the time I have stated, and put into cocks, when I thought those things were ruined, for it rained every day and I did not see how in the world one could save those peas. He hauled them up, as I thought, too wet to save, but later he had no trouble to dispose of the hay at $25 a ton, and it could never have been told that it was not cured under the best of conditions. Last fall there was a man came along telling people how to save pea vine hay and beggarweed hay. All you did was to take the vines and put posts up and lay cross poles on these and put litter and trash on the ground, then throw the vines on this and cover them with something like hay or Japanese cane tops, or anything that would prevent the water running through this stack. I guess that will work all right. One fellow, instead of doing that way, thought he would improve on the method, so he laid the poles every which way, cut the vines and put them up, but they were too heavy and fell down, and the weather came in on them and ruined them.

Q. Did you ever plant sorghum and peas together for a hay crop?

W. E. BROWN. Yes, it is good, and makes a good quality of hay. Some beggarweed and crab grass with your pea vines will make a better grade.

Q. Did you say that you put the peas in cocks after you cut them?

W. E. BROWN. No, I leave them on the ground to wilt.

Q. Do you first rake them into windrows?

W. E. BROWN. Yes, do not leave them in the sunshine too long. You want to cure them in as short a time as you can.

Q. What if the cocks are rained on and a mold is formed?

W. E. BROWN. Most people cut their pea vines too green.

C. K. MCQUARRIE. If you cut your vines at the right condition you can do it without any mold at all. Never let the peas get beyond the blooming stage before you cut them. If you wait and cut the hay after the pods are formed, you are going to lose a good many of the leaves after a heavy rain, for it is a law of nature that after performing its function a thing dies. Crab grass should be cut when the first bloom shows.

W. E. BROWN. I can show you, in our County, pea-vine hay that matures pods, and it is just as good as any that is cut first. The variety has a great deal to do with it. Take the Whippoorwill. Now a great many people pick some of these peas for cooking before the vines are cut.

D. C. GEIGER. I agree with Mr. Brown. I wait until the peas start to ripen, and it makes a better quality of hay and takes only half as much time to make the hay that it takes if cut earlier. It is a mistaken idea that we need a great deal of corn in feeding. There are too many people today who are feeding too much corn in this State. They do not need to use so much. I know of a man in our County who hauled turpentine and fed his stock on grain feed for thirty days. He used sorghum.

S. W. HIATT. There is one variety of forage and feed crop we are interested in, in our County, that has not been mentioned. This is Egyptian wheat. I want to hear something about it. Is it better in the line of seed than anything else?

W. E. BROWN. One of the seed houses got hold of that and boosted it because they thought suckers would get and use it simply because it was something new. It is only one of the good varieties of sorghum. The Gooseneck sorghum, I think, is much better.

J. M. SCOTT. You might say about the Egyptian wheat that probably the grain is as good as any other, but the stalk itself has no sugar content. It is one of the non-saccharine sorghums.

O. L. MIZELL. I have been putting up a variety of hay myself. I have used several things in this hay-making, beggarweed, peanuts, etc., and all have been fairly successful and give a splendid quality of hay. But I have found the peanut vine the most profitable of all. I got a splendid lot of hay, and it is as easy to make as any, and when I get through with the hay I have exactly what I want to follow with the hogs. You usually get your peanuts for nothing, or your hay for nothing, and stock will eat the peanut hay with as much relish as the peavine hay, and it is easy to put up.

Now I will tell you how to make peanut hay. First, take the stumps out of the field, prepare it thoroughly. Lay off the rows thirty inches apart, and drop in the North Carolina peanuts. They do best if planted from ten to twelve inches in the drill. Get a little

flat sweep or a weeder, and if your blacksmith cannot make it, show him how. You should all know how to make one.

P. H. ROLFS. Another forage crop and hay crop has not been mentioned. It is Japanese cane cut and shocked. It makes one of the best for forage in the spring, and with us at the Experiment Station, if kept way into the summer and protected from the rain it is excellent feed. It is cut and shocked like the northern man shocks his corn. All who have tried it, though they have been few, have been well pleased with it. Cut and shock it, of course, before frost. It makes splendid forage for the spring months, March and April, when we are short on forage. Florida, you know, does not produce as much hay as she feeds. The Secretary of the Merchants' Association at Tampa wrote me that $1,700,000 worth of hay is imported into Tampa alone, in a year. This fact insures us a market for all that we can grow.

Q. At what stage in the growth of the Japanese cane do you cut it?

P. H. ROLFS. Leave it stand just as long as you can before frosting. If the upper leaves are nipped a little it does not hurt it much, but do not let it freeze. With us it is kept without any special protection. During the winter and spring we have few rains, but if you should have a rainy season, it would pay to haul it to a shed and protect it. Cut it green and shock it right away. Make your shocks just as big as convenient. You have your sugar content in your cane stalk and the forage in the leaves.

G. W. BELSER. I agree with Prof. Rolfs on the cane proposition. We have tried it in our County and it has proven satisfactory. If you want to you can chop it up before feeding.

H. E. SAVELY. Mr. Mizell suggested using a weeder in cultivating peanuts. It is a good thing to run the weeder over the rows every week and the grass will be kept down all right. It is hard to get a weeder in Florida. Some dealers in the largest towns of the State have never heard of a weeder. It is a very scarce implement, and one that is of great worth.

C. K. MCQUARRIE. I have tried a weeder with peanuts. It is the best thing to use. It will not hurt the plants. Start using it early and run any way that you want to.

J. C. SMITH. Peanuts, I agree with Mr. Mizell, make one of the finest crops to grow. I have my land stumped, and rake it flat, and lay it off in rows eighteen to twenty inches, possibly 24 inches. Then I plant peanuts and cover them with only a little soil. Then I take a board and put on my plow stock and never use a harrow at all. I use the weeder entirely, using it once a week, and then after the crop comes up it can stand any grass that comes in.

SUGAR CANE

C. K. MCQUARRIE

Sugar-cane growing and syrup-making in Florida could be made far more profitable than at present were better methods employed in the production of the crop and the manufacture of the syrup. Sugar-cane can be grown on any of the Florida soils if the proper measures are taken in the preparation of the land and the care of the crop. Land intended for the sugar-cane crop should

be well broken in the fall, and a cover crop grown during the winter to preserve the soil fertility and prevent the leaching which occurs where soils are left bare during the winter. In a general crop rotation, sugar-cane should follow either sweet potatoes, or some crop that left considerable humus in the soil, or a velvet bean crop that had had the vines plowed under when frosted, or grazed off by cattle. These crops furnish humus, which gives the soil the ability to retain the moisture content, which is the most important factor in our crop production.

SEED-CANE SELECTION

Selection of seed-cane is very important. Short-jointed seed canes should never be planted, because they are generally low in vitality, and while the stand may be a little better to begin with, the crop does not rattoon well after it gets to growing. Seed canes should be long-jointed with the buds well developed. It is not advisable to plant any seed-cane if it has not had time to mature the previous fall.

In the preparation of the land for planting seed-cane the furrows should be laid off six feet apart. A good tool to use for this work is the middle-buster. Run it about as deep as the land has been plowed. The cane should be cut in three or four-joint lengths, and laid in these furrows, lapping a little to ensure a good stand. The covering should be light, just enough to ensure good germination of the seed-cane buds. If a heavy rain occurs shortly after planting, a good plan is to run a weeder over the land and break up the crust the rain has formed. This will help to warm up the land and put it in good condition for the germination of the seed-cane. When the first sprouts show through the ground, a sweep or some light tool should be used around the rows, throwing a little soil into the furrows. The middles should be cultivated at the same time, with some tool that does not affect the roots. This cultivation should be kept up until the furrows are level with the surrounding land. In planting deep this way, the crop is anchored in the soil, and is not so liable to be blown over in September and October when high winds prevail.

FERTILIZER

The fertilizer used should analyze about 4 per cent. ammonia, 6 per cent. phosphoric acid, and 8 to 10 per cent. potash. The source of the ammonia should be of an organic nature. Cotton-seed meal is acknowledged to be the most

suitable because of its slow availability and its ability to feed the crop gradually as it is required. To use about 100 pounds of fertilizer per acre for every inch the soil is broken, is a good plan. If the land was broken about six inches deep, 600 pounds could be used profitably; and if plowed ten inches deep use 1,000 pounds of fertilizer.

The sugar-cane crop is peculiar in that it does not begin jointing for the first two or three months after being planted. It seems during that time to be busy preparing and laying the foundation for the crop. It is then that the root system is being multiplied extensively, hence the reason for broadcasting the fertilizer so as to promote a large root system before the crop begins to joint. During the middle of July to the first of August, the stalks begin to make joints, and right at that time a top dressing of nitrate of soda or sulphate of ammonia should be broadcasted at the rate of 150 to 200 pounds per acre. This should be thoroughly mixed with the soil immediately upon application, and cultivation with a shallow tool such as a weeder or a sweep, should be kept up at intervals of every week or ten days until the cool nights set in in September. The crop's growth is increased by these frequent cultivations.

CULTIVATION

The old method of plowing so many times then laying the crop by is not in accordance with modern agriculture. The growing roots in the soil require oxygen and plenty of it, and this can be supplied by cultivation. I find in the weeder of adjustable type one of the best tools the grower can use. In the case of a heavy rain, the weeder should be run between the rows to break the crust left by the rain as soon as possible. If the crust is left, the tendency of the roots is to come to the surface for the supply of air and oxygen, and in the case of deep working tools, the mutilation of the roots is great, so I would recommend the use of a weeder. The sugar-cane crop is peculiar in that it sheds the leaf that protects the bud on every joint as soon as that bud is mature, therefore, along early in October the first stripping should be commenced. All those decayed leaves should be removed to allow fresh air and sunshine to get on to the growing crop. This tends to evaporate moisture leaving only the saccharine portion in the stalk.

In manufacturing the syrup a most important consideration is a mill heavy enough to give a high percentage of extraction. A single farmer under ordinary conditions

cannot afford to buy a mill heavy enough to do effective work; therefore, we recommend every community that grows sugar-cane to unite and form an organization or stock company to erect a central plant to which the cane can be hauled and ground. A plant that will manufacture from 200 to 300 gallons of syrup per day, can be erected for about $300 to $400. Every year there is a loss among the cane-growers in that they do not get more than 50 per cent. of their cane juice, because they do not get a mill heavy enough to get a full extraction of juice. This central plant should be put in charge of a man who knows his business. Evaporation by steam is recommended, because one is able to control the boiling a great deal better than he can by the furnace method. There are many evaporators on the market. I do not recommend the Cooper type of evaporator because it has no skimming facilities. The green material and half cooked material mixing together cause a cloudy appearance. To get a high-grade article, the evaporation should be carried on in three distinct compartments, so the juice can be worked through the compartments without mixing the different stages.

STRAINING THE JUICE

Straining the juice is an important factor right here. The juice should be subjected to thorough straining through either fine strainers or cloth strainers and where possible it is advisable to use a filter skimmer. If one can get gravel the right size, it is a first-class filter; and where black moss can be had, it can be used as a filter. Where the moss is used, one will require quite a supply, so that when one batch gets foul, it can be laid aside, washed and dried, and a new batch substituted. One would require at least three batches of black moss to do effective work. As the juice runs from the mill it is advisable to use dessicating tanks for settling purposes. It does not matter how well the juice has been strained, there is always some fine settlement that will escape this filter. If dessicating tanks are used and a little milk of lime used in them, it will cause a settlement to the bottom of the tank, and give an absolutely clear juice. In the small plant, ordinary barrels can be used for this purpose; but in the larger plant, where several thousand gallons of juice are used per day, one will have to erect tanks. At least three tanks should be used, one for each stage. The juice should have at least from one to three hours to settle. It is necessary to use a good skimmer. The skimmer in general use, with perforations at the

bottom, is not a skimmer at all in the real sense, because 90 per cent. of the skimmings that should be removed go back into the boiling syrup, and this forms a cloudy produce with poor flavor.

TESTING THE SYRUP

The thickness is important. The old method of flaking and testing is a poor method. A hydrometer should be used for testing the density. This should be tested when the syrup is hot. Thirty-four degrees Baumé is acknowledged to be the best point at which to stop evaporation. In running off the hot syrup it is advisable to run it through a woolen blanket. Wool has the faculty of removing all impurities. Care should be taken not to use any cloth with cotton in it, because the effect of the hot syrup will be to swell the cotton and the hot syrup will not run through. The syrup should be bottled, or put in tin packages when hot, as this preserves the flavor.

MARKETING

A great problem before syrup-makers in Florida is the marketing of their product. There are at least a million gallons of last year's syrup in the State to-day not marketed. The reason for this is several-fold. One of the main reasons is the inequality of the products, some thick, some thin, some clear, some cloudy, some well strained, some moldy, and some filthy. Most of the syrup is put in barrels, and barreled syrup is not marketable except to the refiners who take this product and work it over, put it in bottles and packages, and sell it as Florida syrup. The producer gets about 25c for it, and it is sold by the retailer for about 80c, so there is a great profit to some middleman between the producer and consumer. To put the Florida product where it belongs with a good price, we must first of all have a product of uniform density. Then put it in attractive packages, and sell it direct to the consumer. Florida syrup is an article of large commercial importance, and must be marketed like any other high-grade commercial product.

In an experience of twenty years, covering the manufacture of syrup in all its phases, I would recommend to put this product in bottles of pint and quart capacity. These bottles should be uniform, and of clear glass, so that when the consumer buys one, he knows what he is getting. If the consumer buys a tin can, he does not know until he opens it what the product looks like; while in bottles, he can tell at a glance what he is getting.

We must put more business into this. If we put Florida syrup on the market of the country in the packages and of the quality I have indicated, there is an unlimited demand for it; and there is no reason why we should fail to do so. So long as a thousand different farmers are each putting up syrup, there will be that many grades of syrup. Until we wake up to the fact that we must have a central factory and cater to the taste of the buyer, we will never get anywhere.

DISCUSSION

S. J. McCULLY. I have gotten a great deal of information from what Mr. McQuarrie has said, but I want to ask a few questions. Do you recommend broadcasting the fertilizer and using a large percentage of potash?

C. K. McQUARRIE. Certainly.

S. J. McCULLY. Do you recommend to grind all the cane, that is, the short immature joints?

C. K. McQUARRIE. I should say something about that right here. I am glad you brought up that point. The cane as it is originally growing forms glucose. As the joint hardens it forms sucrose. There is always some glucose in the green joints. You should grind one immature joint for every eight mature joints, that will give you glucose enough to prevent the syrup from crystallising. The joints nearest the ground are the sweetest. We have tested that out thoroughly at Pensacola. This may be a source of very great waste, for in some fields you will find the stubble left very long. I took the matter up several years ago with Mr. Rose, and he recommended grinding all the little short joints, he said that was where you got the glucose. Now I wanted to make my syrup bright and clear, and he told me to put in the glucose to stop it from sugaring. I use the hydrometer to test it, and I bottle a great deal, and never have any trouble to dispose of it at 75c to 80c a bottle. Of course the law requires a man to label his syrup, and we are following out this plan if we bottle it.

Q. Will that lime you spoke of (milk of lime) prevent the fermentation of the syrup? I ask because we know it is best to put it up in bottles, and after the spring opens up a considerable amount ferments.

C. K. McQUARRIE. No, that occurs from poor straining.

S. J. McCULLY. Have you any experience with corking the bottles, hot or cold.

C. K. McQUARRIE. Seal your package right away.

W. L. WATSON. I find the usual practice here is to dig the seed cane. Now back in Louisiana people never think of doing that, they cut off the stubble and use it for two or three years, and I have never seen the use of digging up the seed-cane, but if there is any benefit in it, I would like to know it.

C. K. McQUARRIE. I cannot answer that question explicitly, for this reason: there have been several attempts made to show that the stubble was as good as the planted cane. If you leave the stubble standing, the juice is apt to sour and kill the germ.

T. Z. ATKESON. In regard to this point Mr. Watson has brought up about growing cane from the same cane already planted, we did

a little work in Southern Alabama. One test I remember was with one acre of cane grown under ordinary conditions, with ordinary cultivation. We got the first season 15 tons, the second season 17 and the third season not quite 15. I have heard quite a little complaint from the farmers about the use of nitrate of soda causing the cane to become salty, and I am not enough of a chemist to know what it is due to. I have always supposed it was some malnutrition of the plant.

P. H. Rolfs. The Demonstration Agents should keep up with the latest scientific discoveries in connection with the use of fertilizers. Just here I want to call attention to the data as published in some of our annual reports. These show results opposite to what is usually supposed to be correct. It is not an unusual thing for speakers on fertilizers to say that you must add potash to increase the sugar content of sugar-juice, and for that matter, of any other crop that grows. In our fertilizer experiments with Japanese cane we have been unable to detect any such change due to the application of potash to the soil. As a matter of fact the plot of Japanese cane which received no potash at all gave juice with as high a sugar content as those plots that were treated with potash. This is quite in accord with experiments that have been conducted over a period of more than 25 years in the Windward Islands. The amount of sucrose present in cane juice proves to be governed by the variety of cane and the maturity of the cane from which the sample was taken. You should not for a moment infer from what I have said that potash will not increase the yield of cane, especially on those lands where there is potash hunger. This is not the way it is usually stated; the usual statement is that the addition of potash to the soil will increase the sugar production on account of giving a juice with a higher percentage of sugar. Apparently from the best authenticated and best conducted experiments it appears that the addition of potash will increase the total juice production per acre, and in this way increases the amount of sugar per acre.

T. Z. Atkeson. What is the cause and remedy for saltiness in cane juice?

(No one being able to give an answer, this question was passed over.)

O. L. Mizell. In answer to Mr. Watson's point in regard to cutting off seed cane instead of digging it up, I have seen a good deal of this done, and the reason we dig it up is because there are from one to six of those lower joints that die from sourness. I have seen a number of men try to keep over their stubble, but all the efforts that have come under my observation show that it keeps better to let it alone instead of doing anything to it.

COTTON BOLL WEEVIL

E. S. Pace

Farmers living in parts of Florida where no cotton is grown are not much concerned about the boll weevil; but in our fight against the weevil it becomes necessary to put into practice a number of things that are necessary to the best development of agriculture in any section. Raising cotton with the boll weevil means, in the main, better farming.

Fig. 7.—Boll-weevil (enlarged).

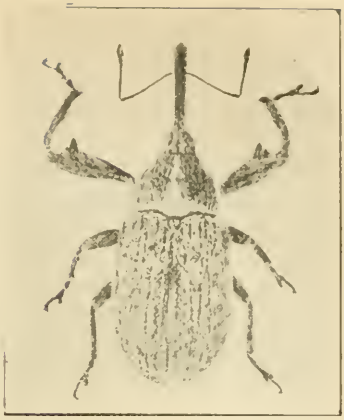

Fig. 8.—Boll-weevil (enlarged).

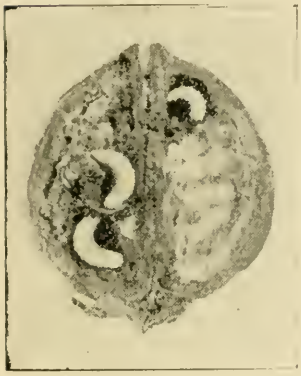

Fig. 9.—Weevil larvae in boll.

Fig. 10.—Weevil larvae in "square" about to drop.

Fig. 11.—Weevils feeding.

(Figs. 7-11, are from photographs by Dr. E. Hinds, Alabama Polytechnic Inst.)

In controlling the weevils one of the first and most important things a farmer should do is to work on the soil, to lay out a systematic campaign of soil improvement. Get out the stumps if they are still in the land. Plow deep, using two or three-horse plows with heavy teams, at the same time getting this deep soil filled with vegetable matter. The farmer should grow crops, especially the legumes, for the sole purpose of furnishing vegetable matter to plow under. Even if he has not the weevil to fight, every farmer should see to it that this humus content is kept up, for if it is allowed to burn out through a system of clean cultivation and lack of attention to the soil, the crop will suffer.

The dark color given the soil by the vegetable matter plowed under will cause the soil to warm up earlier in the spring, which will allow the cotton to be planted earlier and result in earlier fruiting. This is very important, as cotton made with the weevil must be made before the weevils get so numerous, as they always are late in the season. Another benefit derived from the increased humus in the soil is that the fertility it carries keeps the plants growing vigorously. The increased water-holding capacity of the soil will help toward getting an early crop by lessening the shedding of squares and young bolls frequently caused by dry hot weather following more favorable conditions.

DIVERSIFICATION NECESSARY

Another thing the farmer must do, is to become as far as possible independent of cotton. He must be sure in planning his crops for each year, that he has made ample provision for growing all the food he can for both man and beast on the farm. The most successful cotton farmers in the past have been those who not only kept up, but increased the fertility of their soils, and who have not relied on cotton to pay for everything used on the farm. With the weevil to face, it becomes imperative that these better methods be adopted.

DESTROYING THE WEEVILS

The deep plowing, spoken of before, should be done in the fall, and with this must go the fall destruction of stalks. This fall destruction of stalks is a point on which too much stress cannot be laid. The stalks, if possible, should be piled in windrows before frost, allowed to dry out a day or two, and then burned. This will not only kill the mature weevils, taking refuge here, but will destroy the immature stages, which, if allowed to come out just before

frost, stand the best chance of surviving the winter. If the stalks cannot be gotten out of the way before they are killed by frost, the next best thing is to get them out of the way as soon afterward as possible. Either burn them or plow them under deep.

Before the seeds are planted, see to it that a good seed-bed has been prepared. Use pure seed of a good variety, not too late in maturing, and plant when the soil has warmed up sufficiently for the seed to germinate quickly and the plants to grow off well.

The cultivation must be frequent and shallow, the fields should be gone over every week or ten days. The first two or three cultivations can be frequently given to a good advantage with the weeder run across the rows. Cultivation should be continued until the cotton begins to open.

From the time the weevils come out of hibernation until squares begin to form, they live on the young plants and eat the tender leaves in the top or bud. The fields should be gone over carefully every few days, and the weevils picked and destroyed. This picking of the weevils in the spring is next in importance to the fall destruction of stalks. One weevil destroyed at this time, means that hundreds or even thousands have been cut off. After the squares begin to form, the weevils move into these, and for a time the adult weevils are not so easily found. The punctured squares soon begin to fall, and must be picked up weekly or oftener. After this time attach a brush to the plow handles or to the cultivator in such a way that it will hit the plants. This will shake off punctured squares and they can be picked up, or if they fall into a hot dust mulch the immature weevils inside will be killed. The picking up of squares should be continued up until August 1st or 15th, by which time an early crop has set. Picking should be finished as early as possible, so as to allow the stalks to be gotten out of the way in preparation for next year's crop.

DISCUSSION

S. W. Hiatt. How much space should be allowed in planting?

E. S. Pace. Give the same distance as before you had the boll weevil. Of course with the ranker cotton you want to have a pretty good width.

C. K. McQuarrie. What distance would you plant, 4 by 5 or 5 by 5?

E. S. Pace. That is a question that depends on the growth your plants are going to make. On rich land, of course, you want wider

distances. It all depends on the soil and on the seed. In a great many instances we get better results from early maturing varieties. I had rather have a single stalk to a hill.

W. L. WATSON. My experience is rather different. I space rather wide, enough so the plants will never overlap. The sunshine is our best friend in this fight, so leave the cotton so far apart it will not lap. I would not recommend less than 4½ feet in medium soil, 30 inches in the drill. Stress picking the weevil; that is half of the fight. Every one you kill by hand picking early in the year, destroys the possibility of about four million weevils of the late generation.

Destroying the stalks about the first of October does much towards solving the problem. It is the late hatched weevils that survive the winter. One trouble here is our mild winters, and another is the Spanish moss. A good farmer will destroy all of the stumps, and hibernating places around the farm. We must impress on him that he must keep it cleaned up. The man who will keep his place cleaned up will make a bale, while the man across the road makes very little. So if a man keeps his own place picked up he can do a great deal towards keeping the weevil out of his fields. After the eggs are deposited, it takes 14 to 21 days for them to hatch. As a rule all of the old weevils die out by the first of July. Keep your cotton hand picked closely until the latter part of June. The old weevils will die off and the eggs cannot hatch. Over in West Florida last year I believe the best cotton was King's Toole.

E. S. PACE. It is a mighty hard thing to have these directions followed at first, but after the second year there will not be much trouble.

C. K. MCQUARRIE. I look upon the boll weevil as a blessing in disguise. It has compelled better methods of farming, and set the old farmers to thinking. One of the best methods is to make the rows 5 ft. apart and chop out to every three feet. The cotton branches naturally, and if you don't chop out wide you don't get much cotton. Then, with the wide spaces, the sun will beat down on the soil, and if you miss picking up some of the squares they will die from the baking heat. Now I have had instances last year. A man had 15 acres of cotton which he planted wide and chopped out wide. Then the boll weevil came in, and one morning he and his wife and his boys went out and they collected 6 bushels of squares that day and dug a hole and buried them. He kept up his cultivating until the bolls were open, and he made 17 bales on his 15 acres. Just across the way was another man who planted his rows three or four feet apart and chopped out 15 inches and did not pay much attention to picking up the squares. He made 71 lbs. of lint cotton per acre. Now, if you will use some gray matter and elbow-grease, you can fight the boll weevil successfully, but you must be always on the job.

COST OF DIFFERENT METHODS OF REMOVING STUMPS.

B. F. WILLIAMSON

(Corrected copy of this paper and of the discussion was not received at time of going to print, May 10, 1914.)

DIFFERENT KINDS OF VELVET BEANS

J. M. Scott

To begin with, it is hardly worth while to say much about the old Florida Velvet Bean. It is a good deal like an old shoe. It has been used a great deal, but when we want something that we can depend on, we always go back to our old shoes. So with the velvet bean, we always have to fall back on that. It has some faults, but after all, the old Florida velvet bean will probably be a standby for many of us for quite a while. It is spoken of as the old Florida velvet bean, yet it is not so very old. We can all remember when it was more or less of a curiosity, used only for an arbor plant or for shade around a porch. But today it is an important crop for the farmer in nearly all parts of the State. Perhaps its most serious fault is its long season. This is especially true in North and West Florida. In Central and South Florida, we rarely have cold enough to kill it before maturity. But in the north and west parts the yield of seed is often reduced substantially by frost.

(Exhibit of specimens.)

THE LYON VELVET BEAN.

The next is the Lyon velvet bean. This is a Philippine bean, brought in some years ago, and has been pretty thoroughly distributed throughout the State. In some sections it is grown to a considerable extent. This also has its disadvantages. It matures about the same time as the speckled velvet bean, requiring about six months to get an average crop. The pods shatter pretty badly in the field, so that if grown for cattle pasture there is a good deal of waste. If grown for hogs, of course they will gather up the beans more or less from the soil, but cattle will not do that. Probably both beans suffer to about the same extent from caterpillars, and the yield per acre is about the same for the Lyon and the speckled velvet bean. (Exhibit.) We have tried seed of the white velvet bean a number of times, but I have not found any white velvet beans that would come true to color.

D. R. McQuarrie. Some people have advertised white velvet bean seed.

J. M. Scott. One of the large seed houses advertised white velvet beans and I sent for some, but when it came it was seed of the Lyon velvet bean.

The yield of vine and seed per acre is practically the same in both Velvet and Lyon. Some people think the Lyon

bean matures ten days earlier, but we have found very little difference on the station farm, after five years testing. We generally find more green pods on the Lyon bean at the first frost than we do on the velvet.

THE CHINESE VELVET BEAN.

The next is the Chinese velvet bean, probably known to some of you. In general appearance the pods resemble those of the Lyon velvet bean, excepting they are a little longer and a trifle broader. Both resemble the Florida velvet bean while growing in the field, but if you have the Lyon, the Florida and the Chinese all growing side by side you will be able to distinguish the difference distinctly. It is hard to describe, but quite noticeable if you have the three together. The Chinese makes a larger leaf and vine than the others. The Chinese are a different shade of green, a little darker and ranker looking. The yield per acre is about the same as the others. It has the advantage in that it matures three weeks or a month earlier. There is quite a little difference in the color of the pod. The Chinese is darker in color, and the pods are, as a rule, larger than the Lyon. The Lyon grows into larger bunches, and does not give off the irritating dust given by the Florida (speckled.)

Now about the bad habits of the Chinese. It matures earlier, but it has the same bad habit of the pod shattering in the field soon after it ripens, and unless gathered very shortly after maturity there will be a great deal of waste in the field, unless pastured by hogs. The time of maturity depends upon when they are planted. If planted in April they will mature during September; they make more vine than either the Lyon or Florida. The velvet bean does not seem to know when to quit growing. The Chinese matures early in the fall and quits putting on new growth. We noticed this year and last that the Chinese was not so much affected by the caterpillars as the Florida, probably because the foliage was older and tougher, and the caterpillars take the most tender growth they can find. In the latitude of Gainesville the Chinese should not be planted later than the middle of June. You would not get the yield of seed per acre that you would if planted in March or April, but you would get some seed.

It could be used as a cover crop, to follow oats, if you plant late in May; this would be time enough for a fairly good crop.

YOKOHAMA VELVET BEAN.

Here is the Yokohama bean, which I believe most of you know something about. It is a little different from either the Chinese or Lyon. It is easier to distinguish between the Yokohama and the Lyon than between the Chinese and Lyon. There is quite a difference in the pod. The Yokohama pod is more covered with a hairy growth than either the Chinese or velvet. It matures much earlier than the others, ripening most of the seed in about 120 days. It makes very little growth of vine, about like vining cowpeas. We had it planted in 2 1-2 or 3 ft. rows and it barely covered the ground. Probably it does not yield as much seed per acre as either of the others. There is another difference in that it produces nearly all of the pods near the base of the plant, very few being produced out on the vine away from the main plant. We planted it with corn and it was almost choked out, but sown with sorghum it makes a pretty good hay crop. It would probably be pretty green when the sorghum was ready to cut. The Yokohama also has the bad habit of the pods shattering badly. It matures early and you get a fall crop for feeding much earlier than any of the other varieties mentioned. Planted in March, they would come along in July. You can almost get two crops in one year under favorable conditions. Another point in its favor is that coming in early it gets ahead of the caterpillars, which hardly ever appear until early in September. By that time the Yokohama bean, if planted in the spring, is about mature and out of the way.

Q. How do they compare as soil builders?

J. M. SCOTT. I should say for the same amount of growth, they are about the same. The larger the growth of vine, the greater the amount of nitrogen gathered. I think there is no difference in their ability to gather nitrogen, ton for ton of vine. So far as I know there is practically no difference in feeding value.

D. C. GEIGER. I would like to say one thing about the Yokohama and Chinese velvet beans. The Yokohama has met with some disfavor on account of maturing in the wet season. It will produce a very good crop and very satisfactory if properly managed so it can be harvested before the wet season damages it. But with the Chinese velvet bean, my opinion is that in quite a number of ways it is going to prove more satisfactory. It makes a fine growth and matures in October, our most favorable month. * * * My opinion is that with average weather and circumstances it is going to prove one of the most satisfactory of all of the velvet beans, and I believe it would be advisable for every farmer to plant Chinese velvet beans.

J. M. SCOTT. With regard to the difference in soil building, I suppose the Chinese will make more growth per acre and no doubt gather correspondingly more nitrogen. I think Mr. Geiger quite right in his opinion. The Yokohama probably comes in too early to begin

feeding stock for market, and it is earlier than you want to get hogs ready for market. So the Chinese comes early enough in the fall to supply the feed we want.

R. T. KELLEY. When do you advise planting to get them in the fall?

J. M. SCOTT. I should say the middle of April. You will find as a rule the early plantings will mature more seed per acre than the late plantings. It has been tried on practically all kinds of land. I do not know the results on muck land. So far as I know, most people that I have heard from seem to think more of the Chinese than of the velvet.

S. W. HIATT. What is the average yield?

J. M. SCOTT. Twenty to twenty-five bushels to the acre of cleaned seed.

M. C. GARDNER. I had some planted of it, but I believe the old Florida velvet bean right out on poor land made more than the Chinese bean. Take it in good fertile ground I think the Chinese may be better.

J. M. SCOTT. There is probably no crop but is subject to a certain amount of criticism. * * It has been said against the Chinese velvet bean that it wears out the cow's teeth. I suppose it does, but the same thing is true of hard, flinty corn. Any cow is likely to have her teeth worn off if she chews velvet beans and wire grass.

W. L. WATSON. What is the best method for threshing, without machinery?

J. M. SCOTT. I believe, to use a flail. Then I think you will find it takes some time to thresh them out. But put a few in a bag at a time and you can thresh out a good many in a day. There are a good many machines on the market, varying in price and varying in size. Just which is the best I would not want to say.

(Some discussion of prices.)

W. E. BROWN. You can get a small one for $25. I don't know the make.

D. R. MCQUARRIE. There is one made by the Red Ripper Hay-press Co. At first he did not get it started up, but when he did get it going it did a good job. It shelled about thirty bushels a day.

T. Z. ATKESON. The Star Pea Huller people have one made in Chattanooga, I think, that will thresh about 100 bushels a day. It costs about $100. The man who had it tried lots of different kinds. One objection he found to the smaller and cheaper ones was that the lighter machinery could not withstand the strain of the tough velvet beans. Take a light huller, and put on a two or three-horse power gas engine, and you are going to shake something loose. This man tried out half a dozen, and every time he had a new one I went round to see it. I tried most of them, and I think it is practically impossible to get good results from a machine run by hand power. The one he has now is run by electricity. A four-horse power gas engine will run it satisfactorily.

Q. If velvet beans are allowed to run up on corn will the yield be greater?

J. M. SCOTT If you plant corn in alternate rows the yield will be nearly the same as when beans are planted 4 ft. apart. It is al-n ost impossible to harvest the corn. Of course if the rows are 8 ft. apart you do not expect as much corn as when the rows are 4 ft. apart.

S. W. HIATT. What difference in food value is there between crushed and whole beans?

J. M. SCOTT. As far as I know there are no published data. My observation has been that the velvet bean seed is pretty easily digested by cattle, and whether it would pay to grind it or not I cannot say.

D. R. MCQUARRIE. Some of the farmers are feeding ground corn and are very well satisfied with the results. I have found by actual experience that we could do as much work on 200 bushels ground as on 300 bushels whole.

J. M. SCOTT. With regard to grinding food for stock, I might mention that it depends a great deal upon the value of the product. When corn was cheap it was not profitable to grind it for feed, but as corn got more expensive, grinding became more profitable under certain conditions. No doubt with some classes of live stock it would pay to feed crushed velvet beans; I say crushed rather than ground.

T. Z. ATKESON. I know a man who runs a mill; he buys corn all around. I make this suggestion for what it is worth. Of course buying ordinary corn, he got a lot of nubbin corn, and he ground it with velvet beans, and sold it locally for cow food. It was used by everybody who could get it. He sold it for less than cotton-seed meal.

J. M. SCOTT. Velvet-bean hulls are selling for $12 a ton; I would rather have them for feed than cotton-seed hulls. Cotton-seed hulls are $16 to $18. There is really more food value in velvet-bean hulls than in cotton-seed hulls.

VELVET BEAN HYBRIDS.

We have been doing some breeding with the velvet bean and we have gotten a good many hybrids, and we have three worth bringing before you. This is No. 515 (exhibit). It has a good deal larger seed than either the velvet or Lyon or Chinese. It is from a cross between the Florida velvet bean and the Lyon bean. This particular hybrid matures probably two weeks earlier than the old Florida velvet. We have not grown it enough yet to get much idea as to the yield per acre, but it appears to be as good as the velvet or the Lyon. Like the Lyon and Chinese, it shatters its pods.

Here is another hybrid, No. 297. It resembles the other somewhat, though not quite as dark in color, but the pod is quite different—it is larger and has more velvet on it. It is a great deal more like the ordinary speckled velvet bean. Its pods too shatter. This matures about a month earlier than the Florida velvet bean, about the same as the Chinese.

Here is one more, No. 216 (exhibit). This ripens at the same time as the Yokohama, about 120 days from planting. It is easily distinguished as it is lighter in color, the pod is not quite as large, and it is a little different shape. It is quite different from No. 297. * * * * It does not make as much growth of vine—a little more than the Yokohama, but not nearly as much as the old Florida velvet bean does.

P. H. ROLFS. One important consideration in favor of the velvet beans is that they are strongly resistant to root knot, which is not the case with cowpeas. So we have the great advantage in using velvet beans, that they eliminate root-knot from the field, while the cowpeas propagate it.

Another point is that we can use arsenate of lead as a spray for killing the velvet bean caterpillar. The formula is published in one of our Press Bulletins. Remember this next summer when the caterpillars come on.

I would advise you to plant the seed you are getting of these hybrids at your home place. This will enable you to report on these from personal experience.

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Gainesville

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THE SOUTHERN INTERCOLLEGIATE ATHLETIC ASSOCIATION.

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UNIVERSITY CALENDAR

1914-1915

1914—June 15, *Monday*——Summer School begins.
August 7, *Friday*——Summer School ends.
September 22, *Tuesday*——Summer Recess ends.
Examinations for Admission.
Registration of Students.
September 23, *Wednesday*——First Semester begins.
October 3, *Saturday, 1:30 p. m.*——Re-examinations.
October 3, *Saturday, 2:30 p. m.*——Meeting of General Faculty.
November 26, *Thursday*——Thanksgiving Holiday.
December 19, *Saturday, 11:30 a. m.*—Christmas Recess begins.
1915—January 4, *Monday*——Christmas recess ends.
January 12, *Tuesday*——Ten-Day Course for Farmers begins.
February 2, *Tuesday*——First Semester ends.
February 3, *Wednesday*——Second Semester begins.
February 13, *Saturday, 2:30 p. m.*—Meeting of General Faculty.
March 6, *Saturday, 1:30 p. m.*——Re-examinations.
March 8, *Monday*——Review Course for Teachers begins.
June 5, *Saturday, 2:30 p. m.*——Meeting of General Faculty.
June 6 to 8——Commencement.
June 6, *Sunday*——Baccalaureate Sermon.
June 7, *Monday*——Oratorical Contests.
June 8, *Tuesday*——Graduating Day.
June 9, *Wednesday*——Summer Recess begins.
June 11, *Friday*——Examinations for Admission.
June 14, *Monday*——Summer School begins.
August 6, *Friday*——Summer School ends.
September 21, *Tuesday*——Summer Recess ends.

1914 CALENDAR 1915

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Plant Physiologist to the Experiment Station.

J. J. VERNON, B.Agr., M.S.A.,
Professor of Agronomy.

H. G. KEPPEL, A.B., Ph.D. (Clark),
Professor of Mathematics and Astronomy.

JOHN A. THACKSTON, A.B., Pd.M., Ph.D. (New York University),
Professor of Education and Inspector of High Schools.

HARRY R. TRUSLER, A.M., LL.B.,
Professor of Law.

A. J. WIECHARDT, M.E., M.M.E. (Cornell),
Professor of Mechanical Engineering and Drawing.

E. W. BERGER, Ph.D. (Johns Hopkins),
Professor of Entomology and State Inspector of Nursery Stock.

J. R. WATSON, A.M.,
Entomologist to the Experiment Station.

HARVEY W. COX, A.M., Ph.D. (Harvard),
Professor of Philosophy and Education.

LUTHER LEE BERNARD, A.B., Ph.D. (Chicago),
Professor of History and Economics.

H. E. STEVENS, M.S.,
Plant Pathologist to the Experiment Station.

S. E. COLLISON, B.S., M.S.,
Chemist to the Experiment Station.

THOS. W. HUGHES, LL.B., LL.M.,
Professor of Law.

R. W. THOROUGHGOOD, C.E. (Lehigh),
Professor of Civil Engineering.

C. L. WILLOUGHBY, B.Agr.,
Professor of Animal Husbandry and Dairying.

CLIFFORD W. CRANDALL, B.S., LL.B.,
Professor of Law.

L. W. BUCHHOLZ, A.M.,
Professor of Pedagogy and School Management.

C. K. McQUARRIE,
State Agent of Farmers' Co-operative Demonstration Work and Assistant Superintendent of Farmers' Institutes.

A. P. SPENCER, B.S., M.S.,
Assistant in University Extension and District Agent of Farmers' Co-operative Demonstration Work.

E. S. PACE, B.S.,
Assistant in University Extension and District Agent of Farmers' Co-operative Demonstration Work.

O. F. BURGER, M.S.,*
Assistant Plant Pathologist to the Experiment Station.

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*Absent on leave.

JAS. M. CHAPMAN, D.O.,
Assistant Professor of Oratory and Public Speaking.

S. S. WALKER, M.S.,
Assistant Chemist to the Experiment Station.

JOHN BELLING, B.Sc.,
Editor and Botanist to the Experiment Station.

JOHN SCHNABEL,
Assistant Horticulturist to the Experiment Station.

W. S. CAWTHON, A.B.,
Assistant Professor of Mathematics and Physics.

W. S. PERRY, A.B.,
Instructor in Physics and Electrical Engineering.

G. E. PYLE,
Instructor in Gymnastics and Physical Director.

A. J. STRONG,
Foreman of Shops and Instructor in Mechanic Arts.

J. OSCAR MILLER,
Instructor in Violin and Voice and Director of Glee Club.

W. B. HATHAWAY, A.B., B.D.,
Instructor in English and Latin.

R. R. SELLERS, B.Sc.C.E.,
Instructor in Civil Engineering.

IRA D. ODLE, B.S.,
Instructor in Botany and Bacteriology.

J. F. DUGGAR, Jr., B.S.,
Instructor in Soils and Fertilizers.

A. C. MASON, B.S.,
Laboratory Assistant in Entomology to the Experiment Station.

JULIUS MATZ, B.S.,
Laboratory Assistant in Plant Pathology to the Experiment Station.

H. S. SAWYER, A.B.,
Fellow and Assistant in History.

R. S. BLANTON, L.I., A.B.,
Fellow and Assistant in Mathematics.

J. R. SPRINGER,
Laboratory Assistant in Chemistry.

C. A. MARTINI,
Assistant in Agricultural Correspondence Courses.

K. H. GRAHAM,
Auditor and Purchasing Agent.

M. B. HADLEY, A. B.,
Librarian.

OSCAR E. BAYNARD,
Curator of Museum.

MRS. S. J. SWANSON,
Matron.

MISS MARY McROBBIE,
Graduate Nurse in Charge of the Infirmary.

MISS R. A. SEEL,
Secretary to the President.

MISS ELEANOR G. SHAW,
Secretary to the Experiment Station.

MRS. E. M. BERWICK,
Secretary to the College of Agriculture and Assistant in Correspondence Courses.

MISS NELL MURRAY,
Stenographer and Assistant to the Auditor.

MISS BESSIE V. GLOVER,
Stenographer to Extension Work.

MISS ETTA MEANS,
Librarian to the Experiment Station.

M. CREWS,
Foreman of the Experiment Station Farm.

A. G. COLCLOUGH,
Foreman of the Agricultural College Farm .

L. BYRD,
Superintendent of Buildings and Grounds.

STANDING COMMITTEES OF THE FACULTY

1914-1915

The President of the University is *ex officio* a member of all Standing Committees.

ADMISSION

Professors Farr, Keppel, Bernard, Davis, and Crandall.

ATHLETICS

Professors Cox, Trusler, Walker, Willoughby, and Farr.

DISCIPLINE

Professors Flint, Hughes, Walker, Cox, and Cawthon.

GRADUATE WORK

Professors Anderson, Vernon, Benton, and Thackston.

LIBRARY

Professors Bernard, Farr, Benton, and Mr. Hadley.

PUBLIC FUNCTIONS

Professors Davis, Crow, Floyd, and Crandall.

PUBLICITY

Professors Trusler, Willoughby, Crow, Thoroughgood, and Hathaway.

SCHEDULE

Professors Wiechardt, Flint, Thackston, and Vernon.

SELF-HELP

Professors Floyd, Wiechardt, Anderson, and Buchholz.

STUDENT ORGANIZATIONS

Professors Keppel, Cox, Hughes, and Thoroughgood.

UNIVERSITY PUBLICATIONS

Professors Crow, Benton, Farr, and Trusler.

UNIVERSITY ADDRESSES

[First Semester, 1913-14]

Sept. 24----------"University Government and Ideals"
President A. A. Murphree.

Sept. 26----------"Preservation of Health"
Professor E. R. Flint.

Oct. 8---------- "Rhodes Scholarships"
President A. A. Murphree.

Dec. 8----------"The Open Mind"
Chief Justice Thos. M. Shackleford,
Supreme Court of Florida.

Dec. 17---------- "Student Ideals"
President Brown Ayres,
University of Tennessee.

MILITARY ORGANIZATION

MAJOR E. S. WALKER, U. S. A., *Retired,*
Professor of Military Science and Tactics.

FIELD, STAFF AND NON-COMMISSIONED STAFF.

J. P. HALLOWES.....*Major.*
A. D. CAMPBELL.....*First Lieutenant and Adjutant.*
T. J. POPPELL.....*First Lieutenant and Quartermaster*
F. R. WEEDON.....*Sergeant Major.*

Company "A."	*Company "B."*	*Company "C."*
	CAPTAINS.	
R. P. TERRY,	U. C. BAILEY,	N. E. HAINLIN.
	FIRST LIEUTENANTS.	
S. R. WARD,	R. L. JOYNER,	C. A. ROBERTSON.
	SECOND LIEUTENANTS.	
N. MCELYA,	W. A. WHITMIRE,	S. P. HARN.
	FIRST SERGEANTS.	
F. L. PRESCOTT,	T. T. YARBROUGH,	E. B. HELM.
	SERGEANTS.	
B. K. PANCOAST,	C. D. MCDOWALL,	J. G. KERSHAW,
A. C. JACKSON,	G. R. MOSELEY,	C. D. GUNN,
A. R. HANCOCK,	T. U. JACKSON,	H. A. HALL,
R. K. VAN CAMP,	J. F. SIKES,	E. F. WILSON.
	CORPORALS.	
G. W. BROWN,	R. A. DUKES,	E. M. YON,
J. E. MOORE,	H. N. LORD,	C. J. BRAYMER,
R. A. GREEN,	J. M. TILLMAN,	C. C. CASWELL,
C. M. MANN,	J. A. JOHNSON,	R. M. COILE,
J. R. FARRIER,	A. W. RAMSDELL,	H. L. MCMULLEN.

FIELD MUSIC.
C. B. GRACE.

BAND.

SERGEANTS.
G. D. HAMILTON, *Clarinet.* J. L. HEARIN, *Snare Drum.*

CORPORALS.
H. E. FREEMAN, *Alto.* F. LASSITER HOLLAND, *Trombone.*

PRIVATES.

W. R. BRIGGS, *Cornet.*	G. C. CROM, *Tuba.*
L. Y. DYRENFORTH, *Baritone.*	E. W. FREEMAN, *Alto.*
E. M. OGLESBY, *Tenor.*	H. G. REDSTONE, *Alto.*
L. P. SPENCER, *Trombone.*	R. SWANSON, *Cornet.*
F. L. THOMPSON, *Clarinet.*	D. E. WEST, *Bass Drum.*

GENERAL INFORMATION

GIFTS TO THE UNIVERSITY

The educational facilities of many of the State institutions of the South have in recent years been increased by substantial gifts. With deep gratitude the University acknowledges that it also has profited by this generosity. It feels confident that other broad-minded citizens will desire to help in its upbuilding. All gifts, of whatever nature or value, will be gladly received and acknowledged.

George Peabody Hall.—The State University and Commonwealth of Florida here record their grateful appreciation of the gift of forty thousand dollars ($40,000) from the Peabody Board of Trust. This has been used for the erection of a building, named the "George Peabody Hall," in honor of the great benefactor of the South, and devoted exclusively to the training of teachers for the public schools of Florida. Because of this bequest the State is now prepared to offer, at the University, the best facilities for the training of superintendents, high school principals, and teachers for every grade of the public school system.

Chair of Secondary Education.—This opportunity is taken of acknowledging the annual gift of seventeen hundred and fifty dollars ($1,750) by the General Education Board of New York toward the establishment and maintenance of a Professorship of Secondary Education in the University.

Scholarships.—No method of contributing to the spread of higher education is wiser or more beneficent than to give a worthy and ambitious young man the opportunity of availing himself of the advantages offered by his State University. The establishment of several scholarships is gratefully acknowledged. A list of these and the names of the donors will be found on pages 35 and 36.

For further *Donations and Loans* and *Concrete Dipping Vat,* see under Museum and under General Statement of the College of Agriculture.

HISTORY

Beginning with her territorial days Florida has always manifested interest in the higher education of her youth, and with this in mind has formulated many plans and has established many institutions. As early as 1824 the foundation of a University was discussed by the Legislative Council. In 1836 trustees for a proposed University were named, but these seem to have accomplished nothing. (*Memoirs of Florida,* 1,168.)

Upon its admission to the Union in 1845, the State was granted by the general government nearly a hundred thousand acres of land, the proceeds from which were to be used for the establishment of two seminaries, one east and one west of the Suwannee River. This led to the foundation at Ocala in 1852 of the East Florida Seminary, and of the West Florida Seminary at Tallahassee in 1856. The former of these institutions was, however, removed to Gainesville in 1866. The State Constitution of 1868 contained provisions for establishing and maintaining a University (*Art.* VIII, *Sec.* 2), pursuant to which the Legislature passed the next year "An Act to Establish a Uniform System of Common Schools and a University." The salient features of this Act show high ideals and purposes and would be a credit to any State. Other attempts to establish a University were made in 1883 by the State Board of Education and in 1885 by the Legislature. Furthermore the State Constitution, adopted later in the year 1885, expressly permitted special legislation with regard to a University.

Meanwhile in 1870 the Legislature had, in accordance with the terms of the "Land Grant College" Act of Congress of 1862, passed "An Act to establish the Florida Agricultural College." An Act supplementary to this was passed in 1872, and the State received from the general government ninety thousand acres of land, the proceeds from which were to be used in support of the proposed college. A site for the college was selected in 1873 and again in 1875. No educational work having been accomplished in the "temporary college edifice" at its second location, the trustees appointed a committee in 1878 to decide upon a more suitable situation. Not until 1883 was the third site selected—this time, Lake City. Here building operations were pushed forward as rapidly as possible, and upon the completion of the main building in the fall of 1884, the work of instruction was finally

begun. An attempt was made in 1886 by this institution to have its name changed to the "University of Florida," a title it finally secured by the Legislative Act of 1903. Before this, in 1887, the Florida Agricultural Experiment Station had, in accordance with the terms of the Hatch Act, been established as one of its departments and three years later the provisions of the Morrill Act provided a substantial increase in its annual income.

During these years, in addition to the new State University and the Florida State College at Tallahassee, four other institutions of higher education, all depending upon the State for support, had come one by one into existence. These were the Normal School at DeFuniak Springs, the East Florida Seminary at Gainesville, the South Florida College at Bartow, and the Agricultural Institute in Osceola County. In 1905, however, inasmuch as these had failed to make sufficient differentiation among themselves and to separate their work sufficiently from that of the high schools of the State, and inasmuch as the cost of maintaining all six seemed disproportionate to the results obtained, the Legislature decided to consolidate their activities at two closely co-ordinated institutions. This action, the "Buckman Act" of 1905, had, as its practical effect, the merging of the six schools into the "Florida Female College" at Tallahassee and the "University of the State of Florida." Both these institutions began their scholastic work in September, 1905. In 1909 an Act of the Legislature changed the name of the one to the "Florida State College for Women," of the other to the "University of Florida."

During the first session of the University a distinct Normal School, which included two years of Sub-Freshman grade, was maintained. In addition to this, instruction was given in agriculture and in engineering, as well as in the usual collegiate branches. Candidates for admission to the Freshman class must have finished the eleventh grade of a high school. The Agricultural Experiment Station was a separate division, although members of its Staff gave instruction to the students and although the President of the University acted as its Director. The next year the Staff of the Agricultural Experiment Station were required by the Rules and Regulations of the Department of Agriculture to devote their time exclusively to Station activities, and Mr. P. H. Rolfs was elected Director. The Normal

School was abolished and instruction in pedagogy was transferred to the University proper. Two years of Sub-Freshman work were, however, still offered.

Upon the election in 1909 of Dr. A. A. Murphree to the presidency, steps were taken to reorganize the University. The present organization went into effect in 1910. The College of Law was added in 1909 and the departments offering instruction mainly to normal students were organized into a distinct college in 1912. In 1913 the present entrance requirements went into effect.

LOCATION

Acting under powers conferred by the Buckman Act, the State Board of Education and the Board of Control in joint session, on the 6th day of July, 1905, selected Gainesville as the location for the University. During the scholastic year of 1905-06, that is, until suitable buildings could be erected at Gainesville, it was found necessary to carry on the work of the University at Lake City. Since the summer of 1906 the institution has occupied its present site.

The advantages that Gainesville presents as the seat of the University are numerous. It is centrally located and easy of access, being reached by the leading railroads of the State. It has well paved, lighted, and shaded streets, an exceptionally pure water supply, and a good sewerage system. The citizens are energetic, progressive, and hospitable. The moral atmosphere is wholesome, and for years the sale of intoxicants has been prohibited by law. The leading denominations have attractive places of worship.

GROUNDS AND BUILDINGS

The University occupies a tract of five hundred and eighty-nine acres, situated in the western extremity of Gainesville. Ninety acres of this tract are devoted to the campus, drill-ground, and athletic fields; one hundred and thirty-five acres are utilized for the farm of the College of Agriculture; the remainder is used by the Agricultural Experiment Station.

The University is one of the few institutions in the United States that made plans before laying the foundation of a single building for all future development of the campus, as far as this could be foreseen. Consequently the campus presents an har-

monious appearance. The liberality of the State has permitted the erection of buildings as fast as they were needed. Eleven have already been constructed, all of which are lighted with electricity, supplied with city water, and furnished with modern improvements. The latest appropriation made by the Legislature contains provisions for a handsome building for the College of Law, which has come to feel the need of a home.

These buildings are:

The two *Dormitories,* Thomas Hall and Buckman Hall, brick and concrete structures, three stories in height, sixty feet in width and three hundred and two hundred and forty feet, respectively, in length. They are built in fireproof sections, each containing twelve suites of dormitory-rooms and on each floor of each section a shower-bath, lavatories, and toilet.

The *Mechanic Arts Shop,* a one-story brick building, sixty feet long and thirty feet wide, with a wing thirty feet long and twenty feet wide. It provides for the shop work in the engineering, mechanic arts, and manual training courses.

Science Hall, a brick and concrete building of two stories and a finished basement, one hundred and thirty-five feet long and sixty-six feet wide. It contains the classrooms and laboratories of the Departments of Botany and Horticulture, Chemistry, Physics, and Biology and Geology.

The *Experiment Station Building,* a brick and concrete structure, of three stories and a finished basement, one hundred and twenty feet long and sixty feet wide. It contains the offices and laboratories of the Agricultural Experiment Station.

Engineering Hall, a brick and terra-cotta structure, three stories high, one hundred and twenty-two feet long and seventy-three wide, providing offices, classrooms, laboratories, and drafting-rooms for the Departments of Civil Engineering, Electrical Engineering, Mechanical Engineering, and Mechanic Arts.

The *Gymnasium,* a temporary wooden structure, one story high, sixty feet long and forty feet wide. It is provided with equipment for physical training, lockers, and showers. A swimming pool, thirty-six feet long, twenty-four feet wide, and from four and a half to seven feet deep, has recently been added.

The *Agricultural College Building,* a brick and concrete structure three stories high, one hundred and fifteen feet long and

sixty-five feet wide. The building provides for classrooms, laboratories and offices for the Departments of Agronomy, Animal Husbandry, and Extension Work. One-half of the second floor is used at present as a general assembly hall.

The *University Commons,* a brick building of one story and a basement, one hundred and fourteen feet long and forty-two feet wide, with a wing forty-nine feet long and twenty-seven feet wide. It provides a large dining hall and kitchen.

Language Hall, a brick and stone structure of three stories, one hundred and thirty-five feet long and sixty-six feet wide. It is the home of the College of Arts and Sciences, and provides classrooms and offices for the Departments of Languages, History, and Mathematics, together with the administrative offices of the University, and rooms for the use of the literary societies and the Young Men's Christian Association.

The *Teachers' College Building,* known as "George Peabody Hall," constructed with funds given by the Peabody Board of Trust. It is a brick building three stories high, one hundred and thirty-five feet long and seventy-two feet wide, and provides for the Departments of Education and Philosophy, and for the Teacher Training Work of the University. The general library of the University is at present in this building.

The *College of Law Building* will be a brick and stone structure of two stories, one hundred and twenty feet long and seventy feet wide. It will contain an auditorium, model court room, lecture-rooms and offices, library, reading and consultation rooms, cataloguing room, and quarters for the Marshall Debating Society.

VALUE.—The value of the property used for the work of the University is about $660,000.

ENDOWMENT

The annual income of the University, apart from legislative appropriations, is derived principally from the following Federal grants: (a) The "East Florida Seminary Fund," amounting to about two thousand dollars ($2,000); (b) the "Agricultural College Fund" bonds, yielding about seventy-seven hundred dollars ($7,700); (c) one-half of the "Morrill Fund," amounting to twelve thousand five hundred dollars ($12,500); (d) one-half of the "Nelson Fund," yielding twelve thousand five hundred

dollars ($12,500). The total income thus derived amounts to thirty-four thousand seven hundred dollars ($34,700).

For the support of the Agricultural Experiment Station the Federal government makes two annual grants—(a) the "Hatch Fund" and (b) the "Adams Fund." Each of these amounts to fifteen thousand dollars ($15,000).

EQUIPMENT

LIBRARY.—The University Library numbers about 15,000 volumes. Additional books are purchased as fast as funds are available. An effort is being made to place on the shelves all books extant relating to Florida history.

All books in the library are catalogued and shelved according to the Dewey system, making them readily available for reference. Students are encouraged to use the card catalogues, which are arranged alphabetically, both according to authors and to subjects, and to become familiar with the books themselves by free access to the stacks. The librarian or a student assistant is always in attendance to explain the arrangement of books and to give aid in reference work. A taste for literature and information is being developed in many students who, before entering the University, have not had access to a good library.

As a designated depository of Federal documents, the library receives each year several hundred volumes of valuable government publications. Files are kept of all Florida State publications, and of the bulletins and reports of the Agricultural Experiment Stations throughout the Union.

In the reading-room are one hundred and three of the best general and technical periodicals. The back numbers of these are bound and kept on file, and the early volumes purchased whenever they can be obtained and funds permit. Here also are received the leading newspapers of the State. County papers are added to the list at the request of the students.

The technical departments possess special libraries, housed in their respective buildings, but accessible to all members of the University.

MUSEUM.—The Museum, which occupies a large room on the second floor of Science Hall, has recently been equipped throughout with new cabinets. It contains a splendid collection of birds and eggs accumulated by Mr. R. D. Hoyt, of Clearwater, Fla.

This collection, which represents the work of years, contains over 200 mounted birds and about 700 unmounted skins of North American birds, all in excellent condition. There are also complete sets of eggs of about 500 species. The collection is especially valuable since it contains many rare forms, some of which it would be almost impossible to replace.

The Museum also contains an excellent collection of eggs presented by Mr. Lee Graham, of Gainesville, and a large number of eggs and nests lent by Mr. O. E. Baynard. In addition there is an extensive collection of shells and other invertebrates, notably insects.

The geological collections include specimens of most of the more important minerals and rocks and also many fossils and casts.

LABORATORIES.—The following laboratories are maintained by the University:

The *Botanical Laboratory* contains enough dissecting microscopes and instruments, and Bausch and Lomb compound microscopes, magnifying from 80 to 465 diameters, for the individual use of the students; a Zeiss binocular microscope; a large compound microscope of very high magnifying power; two demonstration microscopes; and a McIntosh stereopticon, with projection microscope attachment. For work in histology there are hand microtomes, section knives, a sliding microtome, Millers' paraffin bath, and a supply of reagents, stains and mounts; for studies in physiology there are germination boxes, nutrient jars, an osmometer, a clinostat, and a number of other pieces. An herbarium has been started, to which students each year add specimens which they collect, identify and mount. A case of reference books and periodicals is in the laboratory within easy reach of the students.

The *Chemical Laboratory* is equipped with all the necessary apparatus and material for instruction in general inorganic and organic, analytical and industrial chemistry, as well as for advanced work. It contains two delicate balances, a latest model polariscope, microscope and spectroscope, ample platinum ware (in the form of crucible dishes, electrodes, wire, and foil), and many special pieces of apparatus for illustrating, upon the lecture table, chemical principles. The equipment is modern in every respect and in the new rooms assigned to it can be used to the

best advantage. The stock of chemicals is abundant and complete.

The *Dynamo Laboratory,* providing for practical instruction on electrical machinery, occupies a portion of Engineering Hall. The principal machines are a 10-KW Type ACS General Electric synchronous converter, a 2.5-KW General Electric Type IB direct current generator, a 1-HP Westinghouse Type R motor, a 1-KW synchronous motor, and two 2-KW Westinghouse Type S dynamos, designed to be used either as generators or as motors. The switchboard panel for each machine is placed near it, but is connected to terminals on a main distribution board for the whole laboratory. Power is supplied by a 10-HP single-phase Wagner induction motor, connected to the city alternating current supply, and driving the main shaft of the laboratory. The various machines are driven from this shaft, and can be thrown in or out by friction clutches.

The laboratory is also supplied with transformers, several types of arc lamps, and numerous measuring instruments of different ranges, chiefly of Weston make.

The *Geological Laboratory* contains the United States Geological Survey Educational Series of rocks. Students of Historical Geology are provided with a collection of fossils illustrating the distribution and development of organisms. For the study of mineralogy there is a blowpipe collection of one hundred selected mineral species; an accessory blowpipe collection of miscellaneous minerals; a crystal collection of fifty natural crystals; and a reference collection of choice mineral specimens.

The *Physical Laboratory* is well equipped with apparatus, and meets the needs of such undergraduate work in physics as is usually carried on in the best American colleges. The western half of the ground floor of Science Hall is devoted to the Department of Physics. Its quarters include a lecture-room, 25 feet by 23 feet, with amphitheatered seats; an office and library room; a main laboratory room, 28 by 25 feet; an electrical laboratory, 30 by 14 feet; a battery room; an optical room, 23 by 10 feet, arranged so as to be effectively darkened; a workshop; a store-room; and a private laboratory room, for research work. Water, gas, and electricity from various circuits, are led to all of the rooms. The laboratory is provided with several brick piers, on foundations independent of the rest of the build-

ing, for the accommodation of instruments requiring special stability.

The *Zoological and Bacteriological Laboratories* are well equipped for the work of instruction. In addition to the necessary glassware and reagents, there are a number of high-grade microscopes; dissecting microscopes; two microtomes, one for celloidin, the other for paraffin sectioning; paraffin bath; sterilizers, both wet and dry; warm and cool incubators; dark-ground illuminator; balances; centrifuge; breeding cages; anatomical preparations and models; a number of the Leukart-Chun zoological wall charts; one Leitz large compound microscope with mechanical stage and a full set of apochromatic objectives; and one Bausch and Lomb projecting lantern with accessories. The departmental library contains a number of the current periodicals as well as the more important text-books and reference works.

The *Psychological Laboratory* occupies six rooms on the first floor of Peabody Hall, and is well equipped for class demonstrations, and for carrying on experimental and research work in psychology. As demand arises new equipment will be added. In addition to the apparatus for the regular experimental work, the laboratory is well equipped for carrying on the mental and physical tests in connection with the work in educational psychology offered by the Teachers College.

The *Mechanical Engineering Laboratory* has a 50,000 pound testing machine for testing the strength of materials, a large and small vertical steam engine, a pressure blower, a fan blower, a boiler feed pump, an indicator, and a steam gauge tester, and it is expected to have these erected in the new laboratories at an early date. The large water tube boilers installed for the heating plant are also available for testing purposes in these laboratories.

The *Computing Room* is furnished with all necessary tables and a library of about two hundred reference books for use in connection with the work of the mechanical laboratories and draughting room.

The *Draughting Room* is equipped with substantial oak desks and possesses the necessary minor equipment to accommodate classes of twenty-four students. It has been carefully designed for the purpose and the aim is to make it a model of its kind.

Agricultural Equipment.—The College of Agriculture is

exceptionally well equipped for every branch of its work. Among other things it has well designed laboratories for instruction and investigation in such subjects as soils, field crops, dairying, and agricultural engineering. Its farm has the necessary barns, propagating house, irrigating plant, cold frames, and nurseries. For its work in the department of Animal Husbandry it has well selected live stock and poultry. Its dipping vat, paddock, and scales are of the best. A full description of the equipment will be found in the General Introduction to the College of Agriculture.

Surveying Instruments.—These consist of three surveyor's compasses; three wye levels, two dumpy levels, and one precision level; two plain and four stadia transits, of which three are equipped with attachments for solar and star observations; one complete plane table; and the necessary rods, chains, tapes, and minor apparatus.

Shops.—The *Wood-Shop* is provided with lockers, equipped with full set of tools for bench-work, such as chisels, squares, saws, gauges, etc. The wood-working machinery consists of nine wood-turning lathes, a planer, rip-saw, band-saw, and trimmer.

The *Machine-Shop* is equipped with an 18-inch Cady lathe, an 11-inch Seneca Falls lathe, a drill press, a Gray Planer, a No. 1 Brown & Sharpe Universal Milling Machine, a Springfield shaper, a small Barnes lathe, three emery wheels, grindstone, vises, machine-shop tools.

The *Forge-Shop* is equipped with six power-blast forges, one hand forge, six anvils, and a large supply of tools.

Athletic Equipment.—The institution has provided a hard surfaced athletic field, including football gridiron, baseball diamond, with grandstand and enclosed field, and ample tennis court facilities. A basket-ball court and concrete swimming-pool are also located on the campus.

The equipment of the gymnasium represents an expenditure of some $3,000.00, and this collection of apparatus is probably unsurpassed in the South.

GOVERNMENT AND REGULATIONS

ADMINISTRATION

Board of Control.—The general government of the University is vested by law in the Board of Control, which consists of five members from various parts of the State, appointed, each for a term of four years, by the Governor of Florida.

The Board of Control appoints the President, and upon his nomination, elects members of the Faculties, directs the general policies of the University, and supervises the expenditure of its funds. The Board also prescribes the requirements for admission, with the advice of the President and Faculties, and upon their recommendation confers degrees.

President.—The direct administration of all affairs of the University is in the hands of the President.

Deans and Directors.—Each college of the University (for organization see page 47) has as its executive head a dean, appointed from the Faculty of that college; the Division of University Extension and the Agricultural Experiment Station have as executive head a director. These officers are responsible to the President.

University Council.—The President and Vice-President of the University, the Deans of the several colleges, and the Director of the Experiment Station form a council of administration, with the following functions: To lay out new lines of work, inaugurate new enterprises in general, and prepare the annual budget; and to act as the judicial body of the general faculty on cases of general discipline not under the authority of the colleges, on new courses of study and changes in existing courses, bringing these matters before the Board of Control, and on questions of college action referred to it by any member of the general faculty.

Faculty.—The General Faculty of the University includes all persons engaged in the work of instruction in the University, excepting laboratory assistants and under-graduate assistants to the professors. Under the leadership of the President it forms the general governing body in all matters of instruction and discipline.

The Faculty of a college consists of those members of the General Faculty who give instruction in it. Under the leadership

of its Dean, it forms the governing body in matters of instruction and discipline in its college.

Agricultural Experiment Station Staff.—The Staff consists of all persons engaged in scientific work in the Station. Under the leadership of the Director, it has authority in all matters of agricultural investigation and their publication.

DISCIPLINE

Officers.—An *Officer in Charge*, occupying quarters in one of the dormitories, has immediate supervision of the general life of the student-body.

In each section of the dormitories a *Monitor* maintains a general oversight and makes reports to the Officer in Charge. Monitors are appointed from among those students who are more than twenty-one years of age.

Offenses Against Good Conduct.—Any offense against good conduct, in the ordinary meaning of the word, renders a student liable to discipline, whether or not a formal rule against the offense has been published.

The following offenses will be treated with especial severity: Disrespect to an officer of the University; wanton destruction of property; gambling; drunkenness, or having intoxicating liquors in possession on the University grounds.

The use of intoxicating liquors at student functions of any kind or by student groups, either on or off the campus, is strictly forbidden.

Hazing.—No form of hazing will be tolerated in the University, and no student will be assigned to a room in a dormitory until he has matriculated and signed the following pledge:

"I hereby promise upon my word of honor, without any mental reservation whatsoever, to refrain from all forms of hazing while I am connected with the University of Florida."

Absence from the University.—No undergraduate student is permitted to be absent from the University over night without written permission from the Officer in Charge.

Absence from Classes.—A student who accumulates ten unexcused absences from classes, or three unexcused absences from drill, will be given a severe reprimand, and parent or guardian will be notified. Two additional unexcused absences will cause the student to be dismissed from the University. Ten

unexcused absences from the chapel service will subject all students, except Seniors and those in the College of Law, to the same penalty.

Attendance Upon Duties.—A student who, without good cause, persistently absents himself from his University duties, is, after due warning, dishonorably dismissed for the remainder of the academic year. A student who, by reason of ill health or outside demands upon his time, finds it impossible to give regular attention to University duties, is requested to withdraw; but such request does not in any way reflect upon his good standing.

All delinquencies in University duties are reported to the Officer in Charge, who brings them to the attention of the students, and requires a prompt explanation to be made. Careful records of all delinquencies are kept.

STUDIES

Quantity of Work.—A minimum and maximum number of recitation hours (or equivalent time in laboratory courses) per week is prescribed in each college, and no student may take less than the minimum or more than the maximum except by special permission of the Faculty of his college. Not counting Military Science, these numbers are: in the College of Arts and Sciences, 15 and 18 respectively; in the College of Agriculture, 16 and 23; in the College of Engineering, 15 and 23; in the College of Law, 15 and 18; and in the Teachers College, 15 and 19.

In counting hours, two hours of laboratory work are considered equivalent to one hour of recitation.

Conflicts.—Studies must be so chosen as not to conflict, as shown on the printed schedule for the year.

Assignment to Classes.—Every student must appear before the Dean of his college at the beginning of each academic year for assignment to classes. An individual instructor has no authority to enroll a student in any course, except as authorized by the Dean of his college.

Choice of Studies.—The choice as to which one of the various curricula is to be pursued rests entirely with the individual student, subject to considerations of proper preparation; but the group of studies selected must be that belonging to one of the regular years in the chosen curriculum exactly as announced in the catalogue, unless special reasons exist for deviating from this

arrangement. A student will, however, be held to the requirements of the catalogue under which he entered.

CONDITIONS.—A student who is prepared to take up most of the studies of a certain year in the regular curriculum, but is deficient in some studies, will be permitted to proceed with the work of that year. Such a student is said to be *conditioned;* he is permitted to proceed subject to the *condition* that he make up the studies in which the deficiency occurs. This should be done, when possible, by study with a private tutor, and examination as soon as the work is completed; but it may be done by pursuing the studies in question with a lower class in the University, and the Dean of the college in which the student is enrolled has authority to require it to be done in that way when such procedure seems best. In every case, provision for all of the lower studies must be made before any of the higher studies may be taken; and in the event of conflicts in the schedule, or excessive quantity of work, higher studies must give way to lower.

EXTRA STUDIES.—By special permission from the Dean of his college, a student may take extra studies in addition to those prescribed in his regular curriculum, provided this can be done without conflicting with a regular study or exceeding the maximum number of hours of study. Such permission is not, as a rule, granted to any conditioned student; and it may be withdrawn from any student in the event of failure in any of the regular studies.

SPECIAL STUDENTS.—Students who may desire to take special courses will be allowed to take those classes for which they may be prepared. Such students are subject to all the laws and regulations of the University. These special courses do not lead to any degree.

The purpose of permitting students to take special courses, other than those regularly offered, is merely to provide for the occasional exceptional requirements of individual students; and any abuse of this privilege, for the sake of avoiding regular studies which may be distasteful, cannot be tolerated. Accordingly, no minor student is permitted to enter as a special student except upon written request of his parent or guardian.

CLASSIFICATION OF IRREGULAR STUDENTS.—A student is deemed to belong to that class in which the majority of his hours of work lies. But a special student is not considered as belonging to any of the regular classes.

Changes in Studies.—After a student is once registered, he is not permitted to discontinue any class, or to begin any additional one, without written permission from the Dean of his college, which must be shown to the instructor involved. If the student has been registered for two weeks, he will not be permitted to make any change in his course without the payment of a fee of two dollars ($2.00).

Grades and Reports.—Each instructor keeps a record of the quality of work done by each student in his classes and assigns grades, on the scale of 100. At the end of each month the average grades for the month of each student are reported to the office of the University for permanent record and for entry upon a monthly report to his parent or guardian.

If the monthly grades show that a student is not doing satisfactory work, he may be required to drop some of his studies and substitute studies in a lower class, or he may be required to withdraw from the University.

Examinations.—At the end of each semester regular examinations are held on all of the work of that semester.

Failure in Studies.—A final grade for each semester's work is assigned, based upon the examination and the monthly grades. If this grade falls below 60, the student is considered to have failed, and may proceed only subject to a condition in the study in which failure has occurred. The passing grades in this and the following paragraph do not apply to students in the College of Law.

Re-examinations.—A student who has failed in the work of a semester is allowed, in case his grade does not fall below 50, to make up the condition by re-examination, on the first Saturday of March or the first Saturday of October. To pass by re-examination, a grade of 70 must be attained. Only one re-examination in any subject is allowed a student; in case of failure to pass, he must repeat the whole semester's work in the subject concerned.

ATHLETICS

Absences on Account of Athletics.—The members of regular athletic teams, together with necessary substitutes and a manager, are permitted to be absent from University duties for such time, not to exceed nine days per semester, as may be clearly

necessary to take part in games away from Gainesville. All class-work missed on account of an athletic trip must be made up as promptly as possible after returning at such hours as may be arranged by the various professors.

Schedule of Games.—The schedule of games must be arranged so as to interfere as little as possible with University duties, and must receive the approval of the Committee on Athletics. All regular games will be scheduled with members of the Southern Intercollegiate Association or with colleges that have signed an agreement to play under Association rules.

Eligibility to Athletic Teams.—Any team playing under the name of the University of Florida must be composed exclusively of genuine students in good standing in the University. A list of the players and substitutes for each game must be submitted to the Committee on Athletics before that game, and must receive its approval. Negligence of duties, or failure in studies, excludes a student from the right to play on a team representing the University.

No student is permitted to play on any of the regular teams, who, in the opinion of the University physician, is not in proper physical condition. No minor student is permitted to play, if his parent or guardian objects to his doing so.

HONORS

Phi Kappa Phi.—A chapter of the Phi Kappa Phi Honor Fraternity was established at the University during the spring of 1912. This society has for its main aim the encouragement of learning and of high ideals. To be eligible for membership a student must have been in attendance at the University for at least three semesters, have been guilty of no serious breaches of discipline, and in addition have finished five-eighths of a course leading to a degree. The number that can be elected is limited to the first third of the Senior class of the University, and to the first sixth of the Junior class of each of the various colleges. The numerical grade which must be attained is based on all college work, whether done here or elsewhere, for which the student receives credit toward his degree. As a grade five per cent higher is required of Juniors than is demanded of Seniors, it is a greater honor to gain election in the Junior year.

Medals.—Medals are offered in the University (1) for the

best declaimer in the Freshman and Sophomore classes; (2) for the best original oration in the Junior class of any college; (3) for the best original oration in the Senior class of any college. These contests are settled in public competition at Commencement. The speakers are limited to four from each class, and are selected by the Faculty.

Through the liberality of Mr. H. H. Buckman, of Jacksonville, Florida, a handsome medal is offered annually to the student of the College of Engineering making the highest average grade for the year.

STATEMENT OF EXPENSES

University Charges.—*Tuition.*—In the College of Law a tuition fee of forty dollars ($40.00) per year is charged. In the other colleges a student whose home is in Florida is subject to no charge for tuition; a student who is a non-resident of the State is required to pay a tuition fee of twenty dollars ($20.00) per year.

Registration Fee.—A registration fee of five dollars ($5.00) per year is charged all students, except one scholarship student from each county in Florida.

In order to secure this exemption the scholarship must be filed with the auditor on the day of registration. These scholarships are to be obtained from County Superintendents of Public Instruction.

An additional fee of two dollars ($2.00) is required of students who enter after the day scheduled for registration.

Damage Deposit.—In order to secure the University against damage, the sum of five dollars ($5.00) must be deposited at registration. Damage known to have been done by any student will be charged to his individual account; other damages will be prorated among the students.

At the end of the scholastic year this deposit, less the amount deducted, will be returned to the student. No orders for the disbursement of sums remaining to the credit of individual students will be recognized by the auditor until after the close of the second semester.

Infirmary Fee.—An infirmary fee of three dollars ($3.00) is charged each student, the proceeds of which go towards defraying the salary of a resident nurse. This secures for the stu-

dent, in case of illness, the privilege of a bed in the infirmary (which occupies Section A of Thomas Hall), the services of the nurse, and attention from the University physician, E. R. Flint, M.D. (Harvard).

Board and Lodging.—Board and lodging will be furnished by the University at a cost of sixty dollars ($60.00) for the first semester, not including the Christmas vacation, and sixty-four and a half dollars ($64.50) for the second semester. These sums must be paid at the beginning of each semester. Under no circumstances, except on account of sickness, will any part of these charges be refunded because of absence for a period of less than one month; and in case a student is dismissed from the University, no part will be refunded. In very exceptional cases, arrangements may be made to pay as follows: Twenty dollars on September 22, October 31, and on December 7; $24.50 on January 29; and $20.00 on March 14 and on April 14. Under *Board and Lodging* are included meals in the dining-hall and room (with heat, light and access to a bathroom), furnished as stated below. The doors of the rooms are provided with Yale locks. A deposit of 25 cents is required for each key, which will be returned when the key is surrendered.

Lodging without Board.—Students occupying a room in the dormitories, but not taking meals in the dining-hall, will be charged $5.00 per month for lodging.

Board without Lodging.—Board without lodging will be furnished at the rate of $13.50 per calendar month, payable in advance. No part of this sum will be refunded.

Furniture.—All rooms are partially furnished. The furniture consists of two iron bedsteads and mattresses, chiffonier or bureau, table, washstand, and chairs. The students are required to provide all other articles, including pillows, bedding, wash-bowl, pitcher, mirror, half curtains, mosquito-bar, etc.

Uniform.—Students in the military department are required to provide themselves with the prescribed uniform, which is furnished under contract. The suit is of Charlottesville cadet gray, of good quality, and inexpensive. A cap of dark blue cloth and two pairs of white duck trousers are also required. This uniform is neat and serviceable and may be worn at all times. The total cost is about $17.00.

Books.—The cost of books depends largely upon the course taken. The cost of required text-books is, in no case, a large item of expense, though in the higher classes the student is encouraged to acquire a few works of permanent value.

Summary.—The following statement summarizes the minimum expenses of a Florida student registered in the College of Arts and Sciences, of Agriculture, or of Engineering, or in the Teachers College:

Tuition	$000.00
Registration Fee	5.00
Damage Deposit	5.00
Infirmary Fee	3.00
Board and Lodging	124.50
Uniform (about)	17.00
Books (about)	10.00
Incidentals (laundry, athletic, literary society, etc., dues), about	20.00
	184.50
Less Damage Deposit returned at end of year	5.00
	$179.50

The actual University charges to a law student (including board and lodging, fees, and tuition, but not including books or damage deposit) are $172.50.

Graduate and other students who are exempt from buying uniforms, will deduct the cost of uniform from the above table; and students from other States will add a tuition fee of $20.00.

REMITTANCES.—*All remittances should be made to the Auditor, The University of Florida, Gainesville, Fla.*

FELLOWSHIPS.—Three Teaching Fellowships, established in order to encourage young teachers to prepare themselves further for their work by taking graduate courses in Education, are offered in the Teachers College. Each fellowship pays two hundred dollars ($200.00) annually.

Application for a fellowship must be made in writing and addressed to the Dean of the Teachers College or to the President of the University. It must show that the applicant is a college graduate and that he has ability to profit by the work offered. Testimonials of good character must accompany the application.

The holder of a fellowship must devote himself to the prosecution of studies leading to the Master's degree in Education. He will be expected to teach four or five hours per week in

the Practice High School, under the direction and supervision of the Teachers College. (He must devote much effort and time to this teaching, since it will count as two hours toward the degree.) He may be called upon for other minor services, such as conducting examinations and teaching review classes, but he shall not be called upon to do anything that would interfere with his regular graduate work.

SCHOLARSHIPS.—Through the generosity of friends of the University the institution is able to offer needy and deserving young men the following scholarships:

Two of $100.00 each per year:

1. *The Board of Control Scholarship.*—Established and maintained by the Board of Control. For Florida students.

2. *The Kirby Smith Scholarship.*—Established and maintained by the Kirby Smith Chapter of the Daughters of the Confederacy. For grandsons of Confederate veterans.

Three of $124.50 each per year:

3. *The Children of the Confederacy Scholarship.*—Established and maintained by the Florida branch of the Children of the Confederacy. For the lineal descendant of a Confederate soldier.

4 and 5. *The United Daughters of the Confederacy Scholarships.*—Established and maintained by the United Daughters of the Confederacy of the State at large. For lineal descendants of Confederate veterans.

Two of $200 per year:

6. *The Southern Railway Scholarship; William Wilson Finley Foundation.*—Maintained by the Southern Railway Company as a memorial to the late President Finley, and in recognition of his interest in agricultural education. Tenable for four years. For a resident of any county through which the G. S. and F. R. R. runs. The recipient must enter the College of Agriculture.

Further particulars relating to this scholarship may be obtained from Mr. M. V. Richards, Industrial Agent, Southern Railway, Washington, D. C., or from Dean J. J. Vernon, College of Agriculture, University of Florida, Gainesville, Florida.

7. *The Knight and Wall Scholarship.*—Established and maintained by the Knight and Wall Company, hardware dealers, of Tampa. Tenable for four years.

Further particulars relating to this scholarship may be ob-

tained from the Superintendent of Public Instruction, Hillsboro County, Tampa, Florida.

Application for a scholarship should be made to the President of the University, and should be accompanied by a record of the student's work and statement of his need, and testimonials as to his character. The scholarships will be awarded according to the following principles:

(*a*) The student must actually need this financial help to enable him to attend the University.

(*b*) He must be worthy to receive such help. To be worthy he must first be a young man of good character and habits; second, he must be sufficiently far advanced to enter not lower than the Freshman Class of the University.

Opportunities for Earning Expenses.—It is often possible for a student to earn a part of his expenses by working during such hours as are not required for his University duties.

The University gives regular employment to a few students as waiters in the dining-hall, as janitors, and in some other capacities. Such employment is not, as a rule, given to a student unless he is financially unable to complete a year at the University without earning money. In making appointments preference is given to students in attendance at the University, as compared with applicants from outside; to members of higher classes, as compared with those of lower classes; to students of high standing as compared with those of low standing; and to students from Florida as compared with those from elsewhere. Employment is not given to a student who fails in any study.

While the employment of students is designed to assist those in need of funds, the payment for their services is in no sense a charity. The rate of remuneration is no higher, and the standard of service demanded is no lower, than would be the case if the work were done by others than students. If a student employee fails to give satisfaction, he is promptly discharged. Otherwise he is continued in his position as long as he cares to hold it, provided it is not found to interfere with reasonable success in his studies, and provided he does not commit any breach of good conduct.

While great credit is due those who are willing to make the necessary sacrifices, students are not advised to undertake to earn money while pursuing their studies, unless such a course of ac-

tion is unavoidable. Proper attention to studies makes sufficient demand upon the time and energy of a student, without the burden of outside duties; and such time as the studies leave free can be spent more profitably in healthful recreation.

ALUMNI ASSOCIATION

At the close of the commencement exercises in 1906 the graduates of the year organized an Alumni Association. All graduates of the University *and the graduates of the former institutions who have had their diplomas confirmed by the University* are eligible for membership. An "Alumni Bulletin" containing a list of the Alumni, their present addresses, and other information concerning them is now being prepared and will shortly be published.

Further information concerning the Association may be had by addressing any one of the officers: President, B. R. Colson, Gainesville, Fla.; Vice-President, N. S. Storter, Punta Gorda, Fla.; Secretary and Treasurer, J. W. Blanding, Gainesville, Fla.

STUDENT ORGANIZATIONS AND PUBLICATIONS

THE YOUNG MEN'S CHRISTIAN ASSOCIATION.—There is a branch of the Y. M. C. A. in the University, which meets every Sunday. At these meetings the practical rather than the theoretical phases of Christianity are freely and candidly talked over, and the students discuss among themselves the special problems which arise in student life. Members of the Faculty, the ministers of the city, and distinguished Christian workers are frequently invited to address the association. Bible classes are organized in connection with the work.

Students, on entering the University, should by all means become identified with this organization, and parents should counsel and encourage them to do so. A note of introduction to the president of the organization will cause especial attention to be given a new student.

LITERARY SOCIETIES.—The *Literary Societies* are valuable adjuncts to the educational work of the University. They are conducted entirely by the students and maintain a high level of endeavor. The members obtain much practical experience in the conduct of public assemblies. They assimilate knowledge of parliamentary law, acquire ease and grace of delivery, learn to

argue with calmness of thought and courtesy of manner, and are trained in thinking and in presenting their thought clearly and effectively while facing an audience. All students are earnestly advised to connect themselves with one of these societies, and to take a constant and active part in its work.

MARSHALL DEBATING SOCIETY.—See page 123.

TRANSIT CLUB.—This is an organization of the civil engineering students, having for its object the promotion of both their social and their intellectual interests. It was founded in the spring of 1909 as a natural result of the fraternal feeling brought about by the close comradeship of camp life, and is the pioneer engineering society in this State. Fortnightly meetings are held in the civil engineering classrooms, and each member in turn presents a paper on some topic of interest to civil engineers.

PEABODY CLUB.—This is an organization of students in the Teachers College and of others interested in teaching. It meets once a week to discuss modern educational problems, especially those that will confront the young teacher in his regular school work. It also brings out the advantages of holding teachers' meetings and conferences. Students who contemplate teaching are urged to become members and to take an active part in the work of this club.

AGRICULTURAL CLUB.—The purpose of the Agricultural Club is to promote interest in agriculture; to unify college thought; to afford training in public speaking; and to prepare for leadership in after life. The club meets weekly. Its membership is composed of students in the College of Agriculture and others interested.

KELVIN ENGINEERING CLUB.—This is a society of electrical and mechanical engineering students. It meets once every two weeks for the discussion of topics of general interest in electrical and mechanical enginering.

GLEE AND MANDOLIN CLUBS.—These organizations add greatly to the pleasures of University life. During the past year they rendered the religious exercises at the morning assemblies much more attractive. Several week-end trips to places in the vicinity of Gainesville and one longer trip were taken. Under the direction of Mr. J. Oscar Miller and with the assistance of Dr. J. M. Chapman as "Reader," they delighted large audiences

wherever they appeared. It is an advantage to every musically inclined student to join one or the other of these clubs, both on account of the training he receives and of the pleasure he derives himself and gives others.

PUBLICATIONS.—Beginning with the session of 1909-10 each Senior class has published an annual, known as the *"Seminole,"* in which appears an account of the college year as seen by the Seniors. The annual is profusely and handsomely illustrated.

The *"Florida Alligator"* is a weekly newspaper owned and controlled by the student-body. In it are recorded the local happenings of interest to the students. Its editorial articles discuss University problems from the viewpoint of the undergraduates. It seeks the support of all the alumni, who will find in it the best means of keeping in close touch with the University. The *"Alligator"* has been very successful during the two years of its existence.

ADMISSION

TERMS.—A candidate for admission must present, along with his scholastic record, a certificate of good moral character; and if he be from another college or university, the certificate must show that he was honorably discharged. No candidate under 16 (19 in the College of Law) years of age will be admitted.

METHODS.—There are two methods of gaining admission to the University:

(1) *By Certificate.*—The University will accept certificates from the approved senior high schools of Florida; from accredited academies and preparatory schools of the State; from any secondary school of another State which is accredited by its State University; and from any recognized college or university.

The certificate presented by the candidate for admission must be officially signed by the principal of the school attended. It must state in detail the work of preparation, and, in the case of Florida high schools, that the course *through the twelfth grade* has been satisfactorily completed.

Blank certificates, conveniently arranged for the desired data, will be sent to all high school principals and, upon application, to prospective students.

(2) *By Examination.*—Candidates not admitted by certificate will be required to stand written examinations upon the en-

trance subjects. For dates of these examinations, see University Calendar, page 6.

REQUIREMENTS.—*"Entrance Units."*—The requirements for admission are measured in "Entrance Units," based upon the curriculum of the high schools of Florida. A unit represents a course of study pursued throughout the school year with five recitation periods of at least forty-five minutes each per week, four courses being taken during each of the four years. Thus the curriculum of the standard senior high school of Florida is equivalent to sixteen units. Two laboratory periods should be counted as one recitation period.

Number of Units.—Admission to the Freshman class of the University will be granted to candidates who present properly certified credentials, showing that they have been graduated from a standard senior high school with a full four-year curriculum based upon an eight-year grammar school course, or who present satisfactory evidence of having completed courses amounting to sixteen units of preparatory work.

These requirements are at the very least equal to fourteen and one-half units as defined by the Carnegie Foundation or the National Educational Association.

Distribution of Units.—Of the *sixteen* units required for admission, *ten* (*eight* in the College of Law) are specified and *six* (*eight* in the College of Law) are elective. Eight of the specified units are required in common by all the colleges of the University while the remaining two vary.

UNIVERSITY REQUIREMENT

English	3 units
Mathematics	3 units
History	1 unit
Science	1 unit

COLLEGE OF ARTS AND SCIENCES
TEACHERS COLLEGE

A. B. Curriculum

Latin	2 units

B. S. Curriculum

One Foreign Language or History and Science	2 units

COLLEGE OF AGRICULTURE

Agriculture	1 unit
History or Science	1 unit

COLLEGE OF ENGINEERING

Mathematics	1 unit
History or Science	1 unit

Elective Units.—The elective units may be chosen from the list of elective subjects given below and from such other subjects as are regularly taught in a standard high school. It is provided, however, that not more than four of these units may be accepted in vocational subjects, such as typewriting, stenography, mechanic arts, agriculture, etc.

LIST OF ELECTIVE SUBJECTS

Agriculture	1 unit
Botany	½ or 1 unit
Chemistry	1 unit
*Engineering Practice	4 units
English	1 unit
Latin	4 units
History	2 units
Mathematics	1 unit
Modern Languages—French, German, or Spanish	2 units
Physical Geography	1 unit
Physics	1 unit
Zoology	½ or 1 unit

Deficiencies.—A deficiency of two units will be allowed a candidate, but such deficiency must be removed by the end of the first year of admission.

DESCRIPTION OF UNIT COURSES

English.—Four units.—The required work in English (including Grammar, Composition and Rhetoric, and the recommended Classics) is designed to cover three years. It is urged that the exercises in Composition and the use of the Classics be continued throughout this time. No candidate will be accepted in English whose work is notably defective in spelling, punctuation, idiom, or division into paragraphs.

(1) *Grammar.*—A thorough knowledge of English Grammar

*Only for admission to the College of Engineering.

both in its technical aspects and in its bearings upon speech and writing.

(2) *Composition and Rhetoric.*—A mastery of the fundamental principles of elementary Rhetoric, such as is given in any standard high school text; and constant practice in Composition, oral and written, during the whole period of preparation.

(3) *Classics.*—The English Classics now generally adopted by schools and colleges. There are two divisions of this work:

I. Reading.—A certain number of books will be assigned for reading (see list subjoined). The form of examination will usually be the writing of a paragraph or two on each of several topics to be chosen by the candidate from a considerable number —perhaps ten or fifteen—set before him in the examination paper. The treatment of these topics is designed to test the candidate's power of clear and accurate expression, and will call for only a general knowledge of the substance of the books. The candidate must also be prepared to answer simple questions on the lives of the authors.

II. Study and Practice.—This part of the examination presupposes the thorough study of each of the works named in this division. The examination will be upon the subject matter, form, and structure. In addition the candidate may be required to answer questions involving the essentials of English Grammar and the leading facts in the periods of English literary history to which the prescribed texts belong.

READING.—With a view to large freedom of choice, the books prescribed for reading are arranged in the following groups, from which at least ten units are to be selected, two from each group:

1. The Old Testament, comprising at least the chief narrative episodes in Genesis, Exodus, Joshua, Judges, Samuel, Kings, and Daniel, together with the books of Ruth and Esther. The Odyssey, with the omission, if desired, of Books I, II, III, IV, V, XV, XVI, XVII. The Iliad, with the omission, if desired, of Books XI, XIII, XIV, XV, XVII, XXI. Virgil's Æneid. The Odyssey, Iliad and Æneid should be read in English translations of recognized literary excellence.

For any unit of Group I a unit from any other group may be substituted.

II. Merchant of Venice. Midsummer Night's Dream. As You Like It. Twelfth Night. Henry the Fifth. Julius Cæsar.

III. Defoe: Robinson Crusoe, Part 1. Goldsmith: Vicar of Wakefield. Either Scott's Ivanhoe or Quentin Durward. Haw-

thorne: House of the Seven Gables. Either Dicken's David Copperfield or Tale of Two Cities. Thackeray: Henry Esmond. Mrs. Gaskell: Cranford. George Eliot: Silas Marner. Stevenson: Treasure Island.

IV. Bunyan: Pilgrim's Progress, Part 1. The Sir Roger de Coverley Papers in the *Spectator*. Franklin: Autobiography (condensed). Irving: Sketch Book. Macaulay: Essays on Lord Clive and Warren Hastings. Thackeray: English Humorists. Selections from Lincoln, including at least the two Inaugurals, the Speeches in Independence Hall and at Gettysburg, the Last Public Address, and Letter to Horace Greeley, along with a brief memoir or estimate. Parkman: Oregon Trail. Either Thoreau's Walden or Huxley's Autobiography and selections from Lay Sermons, including the addresses on Improving Natural Knowledge, A Liberal Education, and A Piece of Chalk. Stevenson: Inland Voyage and Travels with a Donkey.

V. Palgrave: Golden Treasury (First Series), Books II and III, with especial attention to Dryden, Collins, Gray, Cowper, and Burns. Gray's Elegy in a Country Churchyard and Goldsmith's Deserted Village. Coleridge's Ancient Mariner and Lowell's Vision of Sir Launfal. Scott: Lady of the Lake. Byron: Childe Harold, Canto IV, and The Prisoner of Chillon. Palgrave: Golden Treasury (First Series), Book IV, with especial attention to Wordsworth, Keats, and Shelley. Poe's Raven. Longfellow's Courtship of Miles Standish, and Whittier's Snow-Bound. Macaulay's Lays of Ancient Rome and Arnold's Sohrab and Rustum. Tennyson: Gareth and Lynette; Lancelot and Elaine; and The Passing of Arthur. Browning: Cavalier Tunes; The Lost Leader; How They Brought the Goods News from Ghent to Aix; Home Thoughts from Abroad; Home Thoughts from the Sea; Incident of the French Camp; Hervé Riel; Pheidippides; My Last Duchess; Up at a Villa—Down in the City.

STUDY.—Shakespeare: Macbeth. Milton: L'Allegro; Il Penseroso; Comus. Either Burke's Speech on Conciliation with America or both Washington's Farewell Address and Webster's First Bunker Hill Oration. Either Macaulay's Life of Johnson or Carlyle's Essay on Burns.

(4) *History of American Literature; History of English Literature.*—One unit, elective.—The fourth year of the high school course in English usually covers the above subjects.

MATHEMATICS.—Four units.

(1) *Algebra—First Year.*—One unit.—A thorough knowledge of the elementary operations, factoring, highest common factor, least common multiple, fractions, simple equations, inequalities, involution, evolution, and numerical quadratics. This is supposed to represent the work of one year in the high school.

(2) *Algebra—Second Year.*—One unit*.—A thorough study of quadratic equations, ratio and proportion, the progressions, imaginary quantities, the binomial theorem, logarithms, and graphic algebra. This is supposed to represent the work of the second year in algebra in the high school.

(3) *Geometry.*—One unit.—Plane Geometry is required.

(4) *Solid Geometry.*—One-half unit.

(5) *Plane Trigonometry.*—One-half unit.

HISTORY.—Four units.

(1) Ancient History, with particular reference to Greece and Rome ..... 1 unit
(2) European History since Charlemagne ..... 1 unit
(3) English History ..... 1 unit
(4) American History ..... 1 unit

A year's work based on a good textbook of at least 300 or 400 pages is required in the case of each of the above divisions. The student should always know something of the author of the textbook he used and give evidence of having consulted some works in addition to the one studied.

LATIN.—Four units.—At least four years' work in this study is required to cover the four units. The minimum for each year is as follows:

(1) *First Year.*—One unit.—A first year Latin book, such as Collar & Daniell's First Year Latin or Potter's Elementary Latin Course.

(2) *Second Year.*—One unit.—Four books of Cæsar's Gallic War, with constant study of the grammar and constant practice in prose composition.

(3) *Third Year.*—One unit.—Six of Cicero's Orations, with grammar and prose composition throughout the year.

(4) *Fourth Year.*—One unit.—The first six books of the Æneid and as much prosody as relates to accent, versification in general and dactylic Hexameter.

MODERN LANGUAGES.—Two units.—Both units in a modern language should be offered; if only one is offered, the student will be required to pursue the subject a second year in the University.

French.—First Year.—One unit.—(1) Careful drill in pronunciation; (2) the rudiments of grammar, including the element-

*This course represents only one-half unit on the Carnegie unit scale.

ary rules of syntax; (3) abundant easy exercises; (4) the reading of from 100 to 175 duodecimo pages of graduated texts, with constant practice in translating into French easy variations of the sentences read (the teacher giving the English) and in reproducing from memory sentences previously read; (5) writing French from dictation.

French.—Second Year.—One unit.—(1) The reading of from 250 to 400 pages of easy modern prose; (2) constant practice in translating into French easy variations upon the texts read; (3) frequent abstracts, sometimes oral and sometimes written, of portions of the text already read; (4) writing French from dictation; (5) continued drill upon the rudiments of grammar, including forms and syntax, with constant application in the construction of sentences; (6) memorizing of short poems.

German.—First Year.—One unit.—(1) Careful drill upon pronunciation; (2) the memorizing and frequent repetition of easy colloquial sentences; (3) drill upon the rudiments of grammar, including the elementary rules of syntax and word-order; (4) abundant easy exercises; (5) the reading of from 75 to 100 pages of graduated texts, with constant practice in translating into German easy variations upon sentences selected from the reading-lesson (the teacher giving the English), and in the reproduction from memory of sentences previously read.

German.—Second Year.—One unit.—(1) The reading of from 150 to 200 pages of easy stories and plays; (2) practice in the translation into German of easy variations upon the matter read and also in the off-hand reproduction, sometimes orally and sometimes in writing, of the substance of short and easy selected passages; (3) continued drill upon the grammar; (4) memorizing of short poems.

Spanish.—Requirements similar to those for French, which see.

Agriculture.—One unit.—Study of Agriculture for Southern Schools, by Duggar, and The Nursery-Book, by Bailey, or their equivalents. At least one-third of the time should be devoted to laboratory practice, field work, and visits to successfully and unsuccessfully conducted farms and fruit plantations.

Physical Geography.—One unit.—Study of a modern textbook, together with laboratory and field course, covering the following subjects: (1) The earth as a globe; shape of the earth,

how proved; size, how measured; motions, how determined; map making; different modes of projection. (2) The ocean; forms and divisions; depth, density, temperature; ocean movements, waves and currents; character of ocean floor; life in ocean; tides, character and causes; shore lines. (3) The atmosphere; chemical composition, and how determined; pressure of, and how determined; circulation of, character and cause; storms, classification of, and cause. (4) Land, amount and distribution of; topographic charts; plains and plateaus, kinds of, and development of; volcanoes, distribution and character of; rivers, life-history of; glaciers, kinds and characteristics of.

Botany.—One-half or one unit.—Anatomy and morphology; physiology; ecology; the natural history of the plant groups, and classification. Individual laboratory work by the student should receive at least double the amount of time devoted to recitation.

Zoology.—One-half or one unit.—Zoology as given in a standard high school text, and, in addition to the theoretical work, dissection of at least ten specimens. Note-books with drawings showing the character of the work completed must be presented on entrance to the University.

Physics.—One unit.—Study of a standard high school text; experimental work consisting of lecture-table demonstrations and individual laboratory work. The latter should comprise at least thirty exercises from a good laboratory manual.

Chemistry.—One unit.—Individual laboratory work, comprising at least thirty exercises from a recognized manual; instruction by lecture-table demonstration; study of a standard text-book.

ADVANCED STANDING

Advanced standing will be granted only upon recommendation of the heads of the departments concerned. Fitness for advanced work may be determined by examination or by trial. Students from other colleges or universities of like standing will ordinarily be classified according to the ground already covered.

SPECIAL STUDENTS

Provision is made for students desiring to take special courses. (See page 29.)

ORGANIZATION

The University adopted in 1910 the organization and nomenclature recommended by the National Association of State Universities. In accordance with this the following divisions of the work of the institution have been made:

I. The Graduate School.

II. The College of Arts and Sciences:

(a) A Curriculum leading to the A.B. degree.
(b) A Curriculum leading to the B.S. degree.

III. The College of Agriculture:

A Curriculum leading to the degree of B.S. in Agriculture.

IV. The College of Engineering:

(a) A Curriculum leading to the B.S. degree in Civil Engineering.
(b) A Curriculum leading to the B.S. degree in Electrical Engineering.
(c) A Curriculum leading to the B.S. degree in Mechanical Engineering.

V. The College of Law:

A Curriculum leading to the degree of LL.B.

VI. The Teachers College and Normal School:

(a) A Curriculum leading to the A.B. degree in Education.
(b) A Curriculum leading to the B.S. degree in Education.
(c) A Normal Course leading to a Diploma.
(d) The University Summer School.

VII. The Division of University Extension:

(a) Institutes.
(b) Farmers' Co-operative Demonstration Work.
(c) Boys' and Girls' Clubs.

VIII. The Agricultural Experiment Station.

IX. State Nursery Stock Inspection.

GRADUATE SCHOOL

Organization.—The work in this school is under the direction of the Committee on Graduate Work, which consists of Professors Anderson, Vernon, Benton, and Thackston.

Degrees Offered.—The University is not in a position at present to lay any great stress upon the graduate work. Its courses are mainly of a college grade and will doubtless remain so for a good many years to come. For the benefit, however, of those who wish to carry their studies further, courses are offered leading to the degrees of Master of Arts, Master of Arts in Education, Master of Science, Master of Science in Agriculture, and Master of Science in Education.

Prerequisite Degrees.—Candidates for the Master's degree must possess the corresponding Bachelor's degree of this institution or of one of like standing.

Applications.—Candidates for the Master's degree must present to the Chairman of the Committee on Graduate Work a written application for the degree not later than the first of November in the year in which the degree is desired. This application must name the major and minor subjects offered for the degree and must contain the signed approval of the heads of the departments concerned.

Time Required.—The student must spend at least one entire academic year in residence at the University of Florida as a graduate student, devoting his full time to the pursuit of these studies.

Work Required.—The work is twelve hours per week. Six hours of this work must be in one subject (the major) and of a higher grade than any course offered for undergraduate students in that subject. The other six hours (the minor or minors) are to be determined and distributed by the professor in charge of the department in which the major subject is selected. It is understood, however, that no course designed primarily for students of a lower grade than the Junior Class will be acceptable as a minor. It is also to be understood that while the major course is six hours, these hours are not the same as in undergraduate work. It means that the professor has the privilege of using these six

hours for recitations or examinations, but the student will find that considerably more time is required to prepare for one of these recitations than is the case in an undergraduate course. To obtain credit for a minor the student must attain a grade of not less than eighty per cent.

DISSERTATION.—It is customary to require a dissertation showing original research and independent thinking on some subject accepted by the professor under whom the major work is taken, but this requirement may be waived at the option of the professor, subject to the approval of the Committee on Graduate Work. If the requirement be not waived, the dissertation must be in the hands of the committee not later than two weeks before Commencement day.

COLLEGE OF ARTS AND SCIENCES

FACULTY

ALBERT A. MURPHREE, A.M., LL.D.,
President.

JAS. N. ANDERSON, M.A., Ph.D.,
Dean of the College of Arts and Sciences.
Professor of Ancient Languages.

JAS. M. FARR, A.M., Ph.D.,
Professor of English Language and Literature.

EDWARD R. FLINT, Ph.D., M.D.,
Professor of Chemistry.

J. R. BENTON, A.B., Ph.D.,
Professor of Physics.

C. L. CROW, M.A., Ph.D.,
Professor of Modern Languages.

H. S. DAVIS, Ph.D.,
Professor of Geology, Zoology and Bacteriology.

H. G. KEPPEL, A.B., Ph.D.,
Professor of Mathematics and Astronomy.

MAJOR E. S. WALKER, U.S.A., Retired,
Professor of Military Science.

W. L. FLOYD, M.S.,
Professor of Botany.

HARVEY W. COX., A.M., Ph.D.,
Professor of Philosophy.

LUTHER LEE BERNARD, A.B., Ph.D.,
Professor of History and Economics.

W. S. PERRY, A.B.,
Instructor in Physics.

IRA D. ODLE, B.S.,
Instructor in Botany and Bacteriology.

GENERAL STATEMENT

Aim and Scope.—The tendency of universities at the present time seems to be to reach out their arms farther and farther into the domain of knowledge and to become more and more places where the student may expect to be able to acquire any form of useful knowledge in which he may be interested. In the center, however, there is still found the College of Arts and Sciences, the pulsating heart, as it were, sending its vivifying streams to the outermost tips of the institution.

The aim of this college is to prepare for life, it is true, but not so directly and immediately as do the professional schools. It is a longer, but a better road, for those who are able to travel it, to distinction and ultimate success in almost any calling. Especially in the case of the learned professions, it is becoming clearer that a man should first get a liberal education, if possible, before entering upon his professional studies.

The purpose and aim of the College of Arts and Sciences is to impart culture and refinement, to train the mind and strengthen the intellect, to build up ideals and establish the character, to enlarge the vision, to ennoble the thoughts, to increase the appreciation of the beautiful and the true, to add charm to life and piquancy to companionship, to make the man a decent fellow, a useful citizen, an influential member of society in whatever community he may be thrown, in whatever field his life-course may be run.

But if the student wishes to examine the practical side exclusively, he will find that there is also something practical in all these courses. For instance, they are all valuable for him who wishes to learn to teach those subjects. Moreover, the use of electives gives the student an opportunity to specialize in some branch according to his inclination and in furtherance of his plans.

Admission.—For full description of requirements for admission and of unit courses, see pages 39 to 46, inclusive.

Literary Societies.—See page 37.

Degrees.—The College of Arts and Sciences offers courses leading to the degrees of Bachelor of Arts (A. B.), and Bachelor of Science (B.S.).

Subjects of Study.—The subjects of study leading towards

the degrees offered by the College of Arts and Sciences are divided into the following four groups:

I.	*II.*	*III.*	*IV.*
Military Science, I and II,	French, German, Greek, Latin, Rhetoric and English Language, Spanish.	Bible, Economics, Education, English, History, Philosophy, Political Science, Psychology, Sociology.	Agriculture, Astronomy, Bacteriology, Biology, Botany, Chemistry, Drawing, Descriptive Geometry, Geology, Mathematics, Mechanics, Military Science III, Physics, Physiology, Surveying, Zoology.

Requirements for Degrees.—For each of the degrees offered, A.B. and B.S., a total of sixty-two hours must be taken, of which two must be in Group I.

For the A.B. degree it is further provided that fifteen hours must be taken in each of Groups II and III and twelve hours from Group IV; three hours may be chosen from any group; and the remaining fifteen hours (including the "major"*) must be chosen from Groups II, III and (pure) Mathematics.

For the degree of B.S. twelve hours must be taken from each of Groups II and III, twenty-four (including the "major"*) from Group IV, leaving twelve hours to be chosen from the subjects mentioned above.

*For definition, see page 54.

CURRICULUM

Leading to the Degree of Bachelor of Arts

Freshman Year

Names of Courses	Nature of Work	Hours Per Week
English I	Rhetoric	3
French I or German I or Spanish I or Greek I or Latin I	Elementary Course Elementary Course Elementary Course Elementary Course Livy, Ovid, Terence	3
History I	Modern European History	3
Mathematics I	Plane Analytic Geometry, College Algebra	3
Military Science I	Regulations	1
Elective		3
		16

Sophomore Year

Group II	3
Group III	3
Group IV	3
Military Science II	1
Group II or III or in both	6
	16

CURRICULUM

Leading to the Degree of Bachelor of Science

Freshman Year

Names of Courses	Nature of Work	Hours Per Week
English I	Rhetoric	3
Botany I	General Botany	3
French I or German I or Spanish I or Greek I or Latin I	Elementary Course / Elementary Course / Elementary Course / Elementary Course / Livy, Ovid, Terence	3
Mathematics I	Plane Analytic Geometry, College Algebra	3
Military Science I	Regulations	1
Elective		3
		16

Sophomore Year

Group II		3
Group III		3
Group IV		9
Military Science II		1
		16

In the Junior and Senior years candidates for either of the degrees offered must choose their studies so as to conform to the general "Requirements for Degrees" of this college. The major referred to in these requirements must consist of nine hours in one department and must be approved by the head of the department chosen.

In all years the choice of electives must meet with the approval of the dean.

Requirements for Degrees for Students Admitted Before Session 1913-14.—The regulations printed above went into effect with the school year of 1913-14. Students previously admitted to the College of Arts and Sciences will be held to the requirements for degrees in force when they entered.

DEPARTMENTS OF INSTRUCTION

ANCIENT LANGUAGES

Professor Anderson

The study of the classics contributes largely to general culture. In addition to the recognized and peculiar disciplinary value of such studies, and their conspicuous service in cultivating the literary sense and developing literary taste, they have a more immediate value and office as aids to the comprehension and interpretation of modern languages and literature. A thorough study and a full understanding of the modern languages, especially the Romance Languages and our own tongue, demand a considerable preliminary acquaintance with Latin and Greek. Thus from two points of view, that of their own intrinsic beauty and value as culture studies, and that of subsidiary aids to the study of other and modern languages, Latin and Greek command our attention, and call for a large place in any curriculum which proposes to issue in a liberal education.

The following courses are offered for the coming year:

LATIN

LATIN I.—Ovid, about 2,000 verses selected from his various works, but mainly from the Metamorphoses; Versification, with especial reference to the Dactylic Hexameter and Pentameter; Livy, selections, amounting to about two books; Terence, Phormio. (3 *hours.*)

LATIN II.—Selections from the Letters of Cicero and Pliny; selections from the Satires, Epistles, Odes, and Epodes of Horace, with a study of the Horatian Metres. (3 *hours.*)

LATIN III.—Juvenal's Satires, with some omissions; Tacitus, parts of the Histories or Annals; selections from Catullus, Tibullus, Propertius, and Ovid. (3 *hours.*)

LATIN IV.—Several plays of Plautus and Terence; Tacitus, Germania and Agricola; selections from Seneca, Gellius, and Quintilian. (3 *hours.*)

LATIN V*b*.—History of the Roman Literature, preceded by a short study of Roman Life and Customs. (*Second semester;* 3 *hours.*)

LATIN VI.—Grammar and Prose Composition: an intermediate course in Prose Composition adapted to the needs of students taking Latin I or Latin II and consisting of weekly written exercises and some oral work; in connection with this there will be a general review of Latin Grammar with some more advanced work, both in forms and syntax. (2 *hours.*)

GREEK

GREEK I.—The forms and most important principles of the syntax; numerous exercises, partly oral, partly written, and some practice in conversation and sight-reading. One book of Xenophon's Anabasis, with exercises in Prose Composition and study of the Grammar. (3 *hours.*)

GREEK II.—Xenophon's Anabasis, Books II, III and IV; selections from Lucian and the easier dialogues of Plato; sight translation; Prose Composition; Grammar. (3 *hours.*)

GREEK III.—Select orations of Lysias or other Attic orators, with informal talks on Athenian laws and customs; parts of the Iliad and Odyssey of Homer; Prosody. (3 *hours.*)

GREEK IV.—Selections from the Greek historians, especially Herodotus and Thucydides; selections from the Greek dramatists, especially Euripides and Sophocles; selections from the lyric fragments of Alcaeus, Sappho, etc. (3 *hours.*)

GREEK V*a*.—A study of the history of Greek Literature, preceded by a short study of Greek Life and Customs. A knowledge of the Greek language is highly desirable, but is not required for this course. (*First semester;* 3 *hours.*)

GREEK VI.—Grammar and Prose Composition; an intermediate course in Prose Composition adapted to the needs of students taking Greek III or Greek IV and consisting of weekly written exercises and some oral work; in connection with this there will be a general review of Greek Grammar with some more advanced work, both in forms and syntax. (2 *hours.*)

GREEK VII.—Selections from the Septuagint and from the New Testament; class and parallel translations; vocabulary, grammar, and stylistic features stressed. (3 *hours.*)

BIBLICAL INSTRUCTION

Professor Buchholz

The following courses are offered to Juniors and Seniors, embracing such aspects of Biblical study as the University is pre-

pared to give, with a view to providing a major subject in the Bachelor of Arts curriculum which will allow students who desire to begin preparation in the University for such work as Secretary or Physical Director of the Young Men's Christian Association, for welfare work in mills or social settlements, or for the ministry, to specialize in this direction. The courses offered will be conducted by the instructors in the departments under which the various aspects of the subject naturally fall and will be given in a spirit free from any narrow sectarianism.

BIBLE I*a*.—*Old Testament History*.—In the first semester the student will be made familiar with the history of the Israelitish nation as narrated in the historical books of the Old Testament; the connections between sacred and profane history will be discussed; and some conception of the development of the cultural life of the nation will be gained.

BIBLE I*b*.—*New Testament History*.—In the second semester the student will use as a text primarily the New Testament itself. A thorough knowledge of the story of the life of Christ and the development of the early church under the ministry of the Apostles will be the main end in view. A correlation of this with world history, and lectures on wider reaches of the subject will be attempted. (3 *hours. Professor Buchholz.*)

BIBLE II.—*The English Bible as Literature*.—In this course the various literary types found in the Bible will be studied and the excellence of the work as compared with other great examples of literature will be discussed. The diction of the 1611 version will be compared with that of earlier and more recent translations, and its effect upon English literature will be demonstrated. (3 *hours. Professor Farr.*)

BIBLE III.—*Old and New Testament Greek*.— See Greek VII. (3 *hours. Professor Anderson.*)

BIBLE IV.—*The Bible as an Ethical and Religious Guide*.—The time allotted to this course will be spent in the consideration of the Bible as a guide for human conduct. Those parts of the Old and the New Testaments which bring out most vividly and directly the moral and religious elements will receive most attention. The course will aim to give to each student that appreciation of the Bible which all men should have. Lectures, Bible readings, studies of great sermons, and a text on Evidences of Christianity suggest in a general way how the course will be conducted. (3 *hours. Professor Cox.*)

BIOLOGY AND GEOLOGY

For a description of the laboratories of this department, see pages 23 and 24; for its geological and other collections, see also under Museum, page 21.

ZOOLOGY

Professor Davis

ZOOLOGY I.—*General Zoology.*—Typical examples illustrating the various groups of the animal kingdom are studied, the object being to give the student a comprehensive idea of the structure, physiology, and activities of animals. (3 *hours.*)

ZOOLOGY II.—*Histology and Physiology.*—A study of the microscopic structure and physiology of the principal tissues and organs of both vertebrates and invertebrates, special attention being paid to mammals. Thorough training is given in the more important methods of investigation. (3 *hours.*)

ZOOLOGY III*b.*—*Entomology.*—Careful attention is given to the structure of insects in general, after which the insect orders are considered, the student being expected to recognize the various orders and the more common families. Emphasis is given to the economic side of entomology. (*Second semester;* 3 *hours.*)

ZOOLOGY IV*a.*—*Vertebrate Morphology.*—Recitations and lectures on the comparative anatomy of vertebrates, accompanied by laboratory work on representatives of the principal groups. (*First semester;* 5 *hours.*)

ZOOLOGY V*b.*—*Vertebrate Embryology.*—Recitations and lectures on the development of vertebrates with special reference to the chick. Laboratory work on the development of the chick. (*Second semester;* 5 *hours.*)

ZOOLOGY VI*b.*—*General Biological Problems.*—Lectures and collateral reading on such general biological problems as variation, adaptation, heredity, and organic evolution. Special attention is paid to the results of recent experimental work. (*Elective, subject to the permission of the instructor; second semester;* 3 *hours.*)

ZOOLOGY VII*a.*—*Physiology and Hygiene.*—Lectures and recitations on general physiology, hygiene and sanitation. (*First semester;* 3 *hours.*)

BACTERIOLOGY

Professor Davis and Mr. Odle

BACTERIOLOGY I*a*.—*General Bacteriology*.—A general introduction to bacteriology designed to afford the student a comprehensive knowledge of bacteria and their relation to every-day life. (*Prerequisite, Chemistry* I; *first semester; 3 hours.*)

BACTERIOLOGY II*b*.—*Agricultural Bacteriology*.—Special attention is given to the bacteria of soil and dairy products with some consideration of the bacterial diseases of animals and plants. (*Second semester; 3 hours.*)

BACTERIOLOGY III*b*.—*Advanced Bacteriology*.—Laboratory work with collateral reading along special lines adapted to the needs of the individual student. (*Second semester; 3 hours.*)

GEOLOGY

Professor Davis

GEOLOGY I.—*General Geology*.—A short course in dynamical, structural and historical geology. (3 *hours.*)

NOTE: At present it will not be possible to give during the same year all the courses offered in this department. The courses given each year will be determined by the demand. No course will be given to less than three students.

BOTANY

Professor Floyd and Mr. Odle

The department is well equipped for carrying on the work. It has large, well-lighted laboratories, a desciption of which will be found on page 22. Plants for study can be easily obtained at all seasons of the year. The flora of the vicinity is rich in the number of important species, and additional material may be secured from the horticultural grounds.

BOTANY I.—*General Botany*.—The study in the classroom and laboratory of the structure, morphology, evolution, and classification of plants. Work is done on special types, beginning with the simplest and advancing to the more complex. Field work is undertaken during the spring months. (3 *hours.*)

BOTANY II*a*.—*Plant Physiology*.—The life processes of plants, such as how water is taken up and disposed of, relation to the soil, nutrition, respiration, irritability, etc., are directly investigated. Much of this is done in the laboratory and garden. (*First semester; 3 hours.*)

BOTANY III*b*.—*Histology and Plant Anatomy*.—The structure and development of the tissues of the higher plants in relation to their function. Practice is given in fixing, staining and mounting microscopic slides. (*Second semester; 3 hours.*)

BOTANY IV*a*.—*Plant Pathology*.—The nature and causes of plant diseases, especially those due to parasitic fungi. Laboratory and field work is done on forms of greatest economic importance in the State. (*First semester; 3 hours.*)

BOTANY V*b*.—*Systematic Botany*.—The morphology and classification of the seed plants. The phylogeny of the different families is given special attention. (*Second semester; 3 hours.*)

BOTANY VI*b*.—*Plant Pathology (Advanced)*.—Methods of culture and investigation of organisms causing plant diseases. This course is intended to prepare students for original investigation. (*Second semester; 3 hours.*)

CHEMISTRY

Professor Flint

The facilities for instruction in chemistry compare favorably with those of the larger institutions of the South and are being steadily improved. The department is equipped with the necessary apparatus and material for instruction in general inorganic and organic, analytical and industrial chemistry. See page 22.

A course in general inorganic chemistry is given the first year. The second year in chemistry is devoted mainly to qualitative, the third year to quantitative analysis. In the science courses, it is possible, on account of the electives offered, to get four years of chemistry, specializing in analytical work in the fourth year. Abundant laboratory work is offered in all of the courses.

CHEMISTRY I.—*General Inorganic Chemistry*.—During the first semester, the non-metallic elements are studied by means of a text-book, lectures and recitations. Special attention is given to the principles underlying chemical union, and to the theories and laws which govern the science. In the second semester the metals and their more important compounds are studied. (*3 hours.*)

CHEMISTRY II.—*Laboratory Course in General Chemistry*.—In order to impress the principles of the science upon the minds of the students, they are required to repeat in the laboratory many of the experiments seen in the lecture-room, taking notes of the same, and writing the chemical reactions as far as possible. Each

one is required to perform over a hundred experiments designed to illustrate chemical principles, including the preparation of many of the elements and their most important compounds. In the second semester the laboratory work is designed to study the reactions of the metals with a view to their classification. During this semester a portion of the time is devoted to a thorough course in dry analysis. (*Two exercises a week.*)

CHEMISTRY III.—*Laboratory Course in Qualitative Analysis.* —(*Three exercises a week.*)

CHEMISTRY IV.—Course III, with two additional exercises a week in the same line of work. (*Five exercises a week.*)

CHEMISTRY V.—*Organic Chemistry.*—Lectures, recitations and laboratory work. The laboratory work is designed to illustrate the various principles as given in the text, as well as practice in making pure organic preparations. (*Three hours.*)

CHEMISTRY VI.—*Chemical Technology.*—Consideration of the chemical principles involved in the manufacture, refining and preparation of the leading products of commercial importance. "Thorp's Outlines of Industrial Chemistry" is used as a text, lectures being given occasionally enlarging upon or explaining the subject-matter of the book. Among the subjects studied are fuels, sulphuric acid, the soda industry, the chlorine industry, fertilizers, cements, glass, pigments, coal tar, mineral oils, soap, starch, sugar, fermentation industries, explosives, textile industries, paper, leather. In connection with this visits will be made to such factories and chemical industries as may be accessible. (*Three hours.*)

CHEMISTRY VII.—*Quantitative Analysis.*—(*Elective in the Senior year to students in the B.S. Courses;* 3 *hours.*)

CHEMISTRY VIII.—In this course five exercises a week are devoted to laboratory work. During the first semester this is given to Quantitative Analysis, the exercises being selected with a view to familiarizing the students with the leading quantitative operations involved in the gravimetric, volumetric, and electrolytic methods in vogue. During the second semester the work of each individual is selected to aid especially in the line of work he may wish to pursue in the future, as medicine, pharmacy, analytical chemistry, etc. (*Seven hours.*)

CHEMISTRY IX*a or b.*—Lectures in Agricultural Chemistry, embracing the chemistry of soils, the atmosphere, plant and animal

growth and feeding, fertilizers, dairy products, insecticides, etc. (*Either semester; 3 hours.*)

ENGLISH LANGUAGE AND LITERATURE

Professor Farr

The work of this department is designed to meet the requirements for a practical and liberal education, and is regarded both as a necessary auxiliary to the training in technical courses, and as an important factor among the liberalizing studies. The three sides of the subject, Rhetoric, Linguistics, and Literature, are presented as fully as the time allotted will permit. While Rhetoric and Composition are especially stressed in the lower classes, literary studies in the higher, and linguistic work in electives, still the attempt is made to keep the three viewpoints before all classes as necessary to a mastery of their native language.

English I.—*Advanced College Rhetoric.*—This course is designed to train the students in methods of clear and forceful expression. Throughout the year instruction is carried on simultaneously in formal rhetoric, in rhetorical analysis and in theme writing, the constant correlation of the three as methods of approach to the desired goal being kept in view. In addition a private reading course is assigned to the individual student. (*Required of all Freshmen; 3 hours.*)

English II*a*.—*Development of English Prose.*—This course will follow the method of Minto's Manual in tracing historically the growth of the English prose literature, supplemented by collateral readings and by essays upon phases of the subject. (*First semester; 3 hours.*)

English II*b*.—*Development of English Poetry.*—A continuation of the first semester's work in applying the method outlined to the study of English poetry. (*Second semester; 3 hours.*)

English III*a*.—*Milton and the Epic.*—This course centers in a study of the Paradise Lost, around which are grouped studies in the Age of Milton and in the Epic as a type in Comparative Literature. The first four books of the poem are read in class. Written reviews on the remaining books alternate each week with essays from the student and lectures by the instructor on various phases of the subject. A reading course in the minor poets of the age and in the English translations of the great Epics is assigned to each student. (*First semester; 3 hours.*)

English III*b*.—*Shakespeare and the Drama.*—This course follows the above method. Three of the Shakesperian plays are read in class. On eight others a written review is held each fortnight and on the alternate week essays are written, and lectures are given by the instructor. Readings in the English Drama from the Cycle plays to contemporary production are assigned. (*Second semester; 3 hours.*)

English IV*a*.—*American Poetry.*—This course will take a rapid survey of the development of poetry in the United States and will then center in a critical study of a few of the more important authors (Bryant, Whittier, Longfellow, Emerson, Lowell, and Poe). (*First semester; 3 hours.*)

English IV*b*.—*Southern Literature.*—A detailed study of the literature of the South with extensive reading and essay work, and an examination of the claims of Florida authors. (*Second semester; 3 hours.*)

English V.—*The English Novel.*—In recognition of the fact that a large part of the reading of most Americans is in this line a course in the Novel is offered. This subject is studied in suitable texts from the two sides of chronological development and of technique; and the student reads a list of novels chosen to illustrate chronology and variety of species, analyzes minutely one novel from the technical side, masters the entire work and life of one novelist, and compares closely a novel and a dramatized version of it. It is hoped the student may be so grounded in the classics and his taste and judgment so trained that his reading in this class of literature may not become mere intellectual dissipation. (*3 hours.*)

English VI.—*The Romantic Revival.*—This course is planned as a study in literary movement. The causes and forces which underlie the movement, its phenomena and the authors and works which exhibit them, and a comparison with other movements in literature will be considered. The work of Prof. Beers will be used as a basis and the student will be led, by means of extensive reading, by investigation and essays and by lectures on the wider ranges of the subject, to realize the truth of his statements. (*3 hours.*)

English VII.—*Anglo-Saxon Grammar and Reading.*—Drill in the forms of the early language, and an elementary view of its relations to the other members of the Aryan family and of its

development into Modern English. The texts in Bright's Anglo-Saxon Reader are studied and Cook's edition of Judith is read. (3 *hours.*)

English VIII.—*Chaucer and the Middle English Grammar.*—During the first semester the works of Chaucer are read in and out of class. The pronunciation, grammatical forms, scansion, condition of text, analogues and sources are closely examined. During the second semester, Morris and Skeats' Specimens, Part II, is studied in connection with informal lectures on Middle English viewed as developing from Anglo-Saxon into Modern English. (*Prerequisite, English VII;* 3 *hours.*)

English IX.—*Engineering Exposition.*—This course will attempt to give special training to the Engineering student in the preparation of the various kinds of writing that he will be called upon to do in the pursuit of his profession. It will consist largely of the writing of papers (upon subjects assigned by the departments in the College of Engineering), which will be criticised and revised. (*Engineering Seniors;* 1 *hour.*)

HISTORY AND THE SOCIAL SCIENCES

Professor Bernard

Students entering the University for the first time who have not had satisfactory courses in European or American history are advised to include these subjects in their courses of study as a general cultural foundation for their other work. It is also recommended to those who expect to elect more than one course in the social sciences that they begin with the first course in sociology, this being the most general course in the social sciences.

History I.—*European History.*—The growth of civilization in Europe in its various aspects from the earliest historical times to the present. (3 *hours*)

History II.—*American History.*—The growth of nationalism, democracy, and industrialism in the United States, with particular reference to the origins of the problems of to-day. (3 *hours.*)

History III.—*History of Democracy.*—Not offered in 1914-1915. (3 *hours.*)

History IV.—*Industrial History of England and the United States.*—Not offered in 1914-1915. (3 *hours.*)

ECONOMICS

ECONOMICS I.—*Principles of Economics.*—The leading facts regarding business, money, banking, industrial organization, labor, taxation, tariffs, governmental regulation. (3 *hours.*)

ECONOMICS II.—*Selected Problems.*—Not offered in 1914-1915. (3 *hours.*)

ECONOMICS III*b.*—*Agricultural Economics.*—Business methods on the farm, markets, rural credits, and cooperation. (*Second semester;* 3 *hours.*)

POLITICAL SCIENCE

POLITICAL SCIENCE I.—*American Government.*—Federal, State, and local governments, with particular reference to the actual practice of legislation, administration, and the courts. Current political problems. (3 *hours.*)

POLITICAL SCIENCE II*a.*—*Principles of Political Science.*—Not offered in 1914-1915. Offered in 1915-1916. (*First semester;* 3 *hours.*)

POLITICAL SCIENCE II*b.*—*European Governments.*—Not offered in 1914-1915. Offered in 1915--1916. (*Second semester;* 3 *hours.*)

SOCIOLOGY

SOCIOLOGY I.—*Principles of Sociology.*—The evolution of social institutions, with particular reference to the family; selected social problems, such as population, race, immigration, poverty, crime, the church, education, and social reform. (3 *hours.*)

SOCIOLOGY II*a.*—*Modern Philanthropy.*—Causes and conditions of poverty and pauperism, preventive measures, relief, administration. (*First semester;* 3 *hours.*)

SOCIOLOGY II*b.*—*Criminology.*—Causes, prevention and treatment of crime and criminals, with particular reference to Southern conditions. (*Second semester;* 3 *hours.*)

SOCIOLOGY III*a.*—*Rural Sociology.*—Rural life in relation to sanitation, the school, the church, and various other cooperative enterprises. (*First semester;* 3 *hours.*)

SOCIOLOGY III*b.*—*Southern Race Problems.*—A study of the Negro Problem in its anthropological, social, political, and economic aspects. (*Second semester;* 3 *hours.*)

SOCIOLOGY IV.—Seminar.

SOCIOLOGY V*a* or *b*—*Current Public Problems.*—(*Either semester;* 1 *hour.*)

MATHEMATICS AND ASTRONOMY

Professor Keppel

MATHEMATICS

The work in the Department of Mathematics is planned with a threefold purpose in view:

1. For students who intend to *specialize* in Mathematics it provides the preparation for more advanced work. Several advanced courses are offered each year for this class of students.

2. To those who need Mathematics as an *instrument* it offers opportunities to become familiar with this instrument. The application of Calculus not only to Physics, Chemistry and Engineering, but even to such seemingly remote realms as Psychology and Political Economy, makes it advisable that this class should continue the study of Mathematics at least so far as to include Calculus.

3. To others it gives logical training in Analysis and Proof, introduces them to that scientific method par excellence of the Hypothesis, and develops the idea of a deductive system in its classical form.

The following courses are offered each year:

MATHEMATICS A.—Solid Geometry. (*2 hours.*)

MATHEMATICS B.—Plane and Spherical Trigonometry, (*2 hours.*)

MATHEMATICS I.—Plane Analytic Geometry and College Algebra. (*3 hours.*)

MATHEMATICS II.—Spherical Trigonometry and Elementary Calculus. (*1 hour.*)

MATHEMATICS III.—Differential and Integral Calculus. (*3 hours.*)

MATHEMATICS IV.—Solid Analytic Geometry and Calculus. (*2 hours.*)

MATHEMATICS V.—Advanced Calculus and Differential Equations. (*3 hours.*)

The following advanced courses were given in 1913-14:

MATHEMATICS VI.—Theory of Equations and Modern Higher Algebra. (*3 hours.*)

MATHEMATICS VII.—Modern Projective Geometry. (*3 hours.*)

ASTRONOMY

In connection with the Department of Mathematics a course in General Astronomy is offered, consisting of lectures and recitations, with practical exercises. No knowledge of advanced mathematics is presupposed. (*2 hours.*)

MILITARY SCIENCE AND TACTICS

Major Walker

Military instruction at the University of Florida is *not optional,* but is required by law—by the law of the United States and by the law of the State.

The instruction is both practical and theoretical. The practical course consists of drills, target practice, and other military exercises. The drills proper do not exceed three hours per week.

The course in military science is necessary for graduation. Except as noted below all students are required to take this course.

Excused from Military Duty.—Law students, graduates, Seniors, adult specials, those holding discharges from the U. S. army, navy, or marine corps after at least one term of enlistment, and the physically disqualified.

The physically disqualified will be required to submit a certificate to that effect from the resident physician and they will also, prior to graduation, be required to make up an equivalent amount of work in this or some other department.

Those who have served for three years in the national guard will be excused from drills and will also be excused from theoretical work, provided they pass a satisfactory examination—the examination to be prescribed by the Professor of Military Science and Tactics.

Students will be given credit, year for year, for work done at military schools having army officers as instructors.

Those taking the One-Year or Two-Year Course in Agriculture are excused from the theoretical, but not from the practical course.

In the Teachers College those only are excused who are studying to become teachers.

All applications to be excused from military duty for other reasons must be submitted to the Professor of Military Science and Tactics, and all who are required to take military work must

report to him within five days after registering at the University.

The theoretical course set forth below consists of recitations, supplemented by lectures.

MILITARY SCIENCE I.—(a) Infantry Drill Regulations; (b) Small-arms Firing Regulations. (*Required of Freshmen;* 1 *hour.*)

MILITARY SCIENCE II.—Field-service Regulations, Company Administration, Camp Sanitation, and Military Map Reading. (*Required of Sophomores;* 1 *hour.*)

MILITARY SCIENCE III.—The Service of Security and Information, Elementary Military Engineering, Army Regulations, and similar subjects. (*Elective for Juniors and Seniors;* 2 *hours.*)

MODERN LANGUAGES

Professor Crow

French, German, and Spanish are the subjects taught in this department. Extensive courses of reading, in and out of class, frequent exercises, oral and written, and studies in the Literature and Languages of the respective countries form the chief feature of instruction. Carefully prepared English abstracts of nearly all the parallel reading is required.

Authors and text-books vary from year to year. Though the classics are not neglected, special attention is paid to the literatures of the Nineteenth Century

Since the session of 1906-07 tables have been set apart in the dining-hall for those wishing to speak German and Spanish.

All of the courses offered below will not be given in any one year.

FRENCH

FRENCH I.—*Elementary Course.*—Drill in pronunciation and important grammatical forms, elementary syntax, dictation, daily written exercises, memorizing of vocabularies and short poems, translation. (3 *hours.*)

FRENCH II.—*Intermediate Course.*—Work of elementary course continued, advanced grammar, including syntax, prose composition, translation of intermediate and advanced texts, sight reading, parallel. (3 *hours.*)

FRENCH III.—*Advanced Course.*—Syntax, stylistic, composition, history of French Literature, selections from the dramatists or novelists as class may decide. (3 *hours.*)

FRENCH IV.—*Old French.*—A course will be offered in Romance Philology open only to those who have taken French III and Latin II. (3 *hours.*)

GERMAN

GERMAN I.—*Elementary Course.*—Drill in pronunciation and important grammatical forms, elementary syntax, dictation, daily written exercises, memorizing of vocabularies and short poems, translation. (3 *hours.*)

GERMAN II.—*Intermediate Course.*—Work of elementary course continued, advanced grammar, including syntax, prose composition, translation of intermediate texts, sight reading, parallel. (3 *hours.*)

GERMAN III.—A supplementary course in commercial German will be offered to students who are taking or have concluded German II. For the present this course will not count towards a degree. (2 *hours.*)

GERMAN IV.—*Advanced Course.*—Syntax, stylistic, composition, history of German Literature, selections from the dramatists or novelists. (3 *hours.*)

GERMAN V.—*Scientific Reading Course.*—A course in reading scientific German is offered. The nature of the course will depend largely upon the needs of the students taking it. (*Prerequisite, German II;* 3 *hours.*)

GERMAN VI.—Courses are offered in Middle and Old High German. (*Prerequisite, German IV;* 3 *hours.*)

SPANISH

SPANISH I.—*Elementary Course.*—Drills in pronunciation and important grammatical forms, elementary syntax, dictation, daily written exercises, memorizing of vocabularies and short poems, translation. (3 *hours.*)

SPANISH II.—*Intermediate Course.*—Work of elementary course continued, advanced grammar, including syntax, prose composition, translation, parallel. (3 *hours.*)

PHILOSOPHY

Professor Cox

The primary aim of this department is to give the student a broad outlook upon life in general, as well as to give him a better understanding of his own life from psychological, ethical and

metaphysical viewpoints. Philosophy lies nearer to-day than ever before to the various sciences on the one hand, and to the demands of practical life on the other. Students desiring to take work in this department may begin with Course I*a*, Course II*a*, or with Course III*a*. Juniors and Seniors may begin also with Course VII*a*.

Another very important aim of this department is to aid in the professional training of teachers. For description of the laboratory equipment for carrying on mental and physical tests, see page 24.

PHILOSOPHY I*a*.—*General Psychology*.—This course aims to acquaint the student with the facts and theories that are current in general psychological discussion. The study will begin with the sensations, the sense organs, and the functions of the brain; the course will then deal with the higher mental functions, such as attention, perception, memory, feeling, emotion, volition, the self, and like topics. (*First semester; 3 hours.*)

PHILOSOPHY I*b*.—*Experimental Psychology*.—This course will be mainly laboratory work. The student learns to work with the standard apparatus, and becomes somewhat familiar with the current problems in Experimental Psychology. Special attention will be given to methods of psychological investigation, and the collection and treatment of data. (*Second semester; 3 hours.*)

PHILOSOPHY II*a*.—*Ethics*.—A general course in which emphasis will be laid upon the Principles of Ethics. This will involve the study of such topics as goodness, happiness, virtue, duty, freedom, civilization, and progress. Some time will also be given to the history of the various Ethical Systems. (*First semester; 3 hours.*)

PHILOSOPHY II*b*.—*Practical Ethics*.—A study of the moral problems of the individual and social life. (*Second semester; 3 hours.*)

PHILOSOPHY III*a*.—*Logic, Inductive and Deductive*.—This course will emphasize practice in use of syllogisms, inductive methods, logical analysis, and criticism of fallacies. (*First semester; 3 hours.*)

PHILOSOPHY III*b*.—*The Philosophical Poets*.—A study of the philosophical problems and their solution as given by the world's greatest poets. Such problems as Creation, Nature, Life, Free-

dom and Conduct will be given special attention. (*Second semester; 3 hours.*)

PHILOSOPHY IV*a*.—*Social Psychology*.—A study of the influences of the social environment upon the mental and moral development of the individual. (*First semester; 3 hours.*)

PHILOSOPHY IV*b*.—*Abnormal Psychology*.—A study of the abnormal phases of mental life. Such topics as dreams, illusions, hallucinations, suggestion, hypnotism, hysteria, diseases of the memory, diseases of the will, and other mental diseases. Special attention will be given to mental hygiene. (*Second semester; 3 hours.*)

PHILOSOPHY V*a*.—*Genetic Psychology*.—A study of the course of development in the child from birth to adolescence. (*First semester; 3 hours.*)

PHILOSOPHY V*b*.—*Genetic Psychology*.—A study of animal intelligence. The purpose of this course is to give the student a better understanding of animal instincts and intelligence. (*Second semester; 3 hours.*)

PHILOSOPHY VI*a*.—*Philosophy of Conduct*.—A study of the problems of Conduct and Religion in the light of contemporary discussion. The aim of this course is to attack the problems of philosophy from the standpoint of the practical problems of every-day life. (*First semester; 3 hours.*)

PHILOSOPHY VI*b*.—*Philosophy of Nature*.—The aim of this course is to show Man's relation to Nature, and his place in Nature. It will take up the various philosophical doctrines, such as Animism, Pantheism, Materialism, Realism, Agnosticism, Humanism, Idealism, etc. (*Second semester; 3 hours.*)

PHILOSOPHY VII*a*.—*History of Ancient Philosophy*.—This course will trace the development of philosophic thought from its appearance among the Ionic Greeks to the time of Descartes. Special attention will be given to the philosophy of Plato and Aristotle. (*First semester; 3 hours.*)

PHILOSOPHY VIII*a*.—*Advanced Psychology*.—A study of the theoretical and practical problems in the field of modern psychology. This course introduces the student to the theoretical problems that are attracting the attention of modern psychologists. It also emphasizes the practical aspects of psychology as it is applied to Business, Law, Medicine, Education, etc. (*First semester; 3 hours.*)

PHILOSOPHY VIII*b*.—*Advanced Psychology*.—Continuation of VIIIa. (*Second semester; 3 hours.*)

PHYSICS

Professor Benton
Mr. Perry

The work of this department is intended to meet the needs, on the one hand, of those who study physics as a part of a liberal education, and on the other hand, of those who will have to apply physics as one of the sciences fundamental to engineering.

Instruction is given by (1) recitations based upon lessons assigned in text-books; (2) laboratory work, in which the student uses his own direct observation to gain knowledge of the subject; (3) lectures, in which experimental demonstrations of the principles under discussion are given; and (4) seminar work in the advanced courses, in which the various members of the class take up different special problems requiring extended study or investigation, and report upon them in turn to the class.

The physical laboratory is well equipped for the experiments usually required in undergraduate laboratory work in the best colleges. The equipment has been greatly increased in the last few years, and additions are made to it from year to year. For a description, see page 23.

The following courses are offered:

PHYSICS I.—General Physics, including mechanics, heat, acoustics, and optics, but not electricity and magnetism. A knowledge of plane trigonometry is pre-supposed. Text-book to be used in 1914-1915: Kimball's College Physics. (1 *lecture and* 2 *recitations per week.*)

PHYSICS II.—General laboratory physics, to accompany Physics I. A knowledge of plane trigonometry is pre-supposed. Text-book to be used in 1914-1915: Franklin, Crawford and McNutt's Practical Physics. (2 *exercises of* 2 *hours each per week.*)

PHYSICS III.—General electricity and magnetism, being a continuation of Physics I. Text-book to be used in 1914-1915: Franklin and McNutt's Elements of Electricity and Magnetism. (2 *recitations and* 1 *laboratory exercise of* 2 *hours per week.*)

ADVANCED COURSES IN PHYSICS.—Preparation has been made for offering advanced courses in physics, as electives for Juniors,

Seniors and Graduate Students. Six such courses have been planned, as follows: Advanced Experimental Physics, General Mathematical Physics, Mechanics and Acoustics, Heat, Optics, Theoretical Electricity. Each of these courses is arranged to extend through two semesters and to require three hours per week of classroom work, or equivalent time in the laboratory. Any one of these courses will be given when elected by three or more students.

COLLEGE OF AGRICULTURE

FACULTY

ALBERT A. MURPHREE, A.M., LL.D.,
President of the University.

J. J. VERNON, B.Agr., M.S.A.,
Dean of the College of Agriculture and Professor of Agronomy.

W. L. FLOYD, M.S.,
Professor of Horticulture.

C. L. WILLOUGHBY, B.Agr.,
Professor of Animal Husbandry and Dairying.

C. K. McQUARRIE,
Professor of Agricultural Extension.

I. D. ODLE, B.S.,
Instructor in Botany and Bacteriology.

J. F. DUGGAR, JR., B.S.,
Instructor in Soils and Fertilizers.

C. A. MARTINI,
Assistant in Correspondence Courses.

JAS. M. FARR, A.M., Ph.D.,
Professor of English Language and Literature.

E. R. FLINT, B.S., Ph.D., M.D.,
Professor of Chemistry.

JAS. N. ANDERSON, M.A., Ph.D.,
Professor of Ancient Languages.

C. L. CROW, M.A., Ph.D.,
Professor of Modern Languages.

LUTHER LEE BERNARD, Ph.D.,
Professor of History and Economics.

H. S. DAVIS, Ph.D.,
Professor of Zoology and Entomology.

H. G. KEPPEL, A.B., Ph.D.,
Professor of Mathematics and Astronomy.

MAJOR E. S. WALKER, U.S.A., Retired,
Professor of Military Science.

JOHN A. THACKSTON, Pd.M., Ph.D.,
Professor of Education.

HARVEY W. COX, A.M., Ph.D.,
Professor of Philosophy.

L. W. BUCHHOLZ, A.M.,
Professor of Elementary Education, Methods and Supervision.

EDNA M. BERWICK, *Secretary and Stenographer.*

A. G. COLCLOUGH, *Farm Foreman.*

SPECIAL LECTURERS FOR 1914-15.

HON. W. A. MCRAE,
Commissioner of Agriculture, Tallahassee, Fla.

PROFESSOR H. HAROLD HUME,
President State Horticultural Society, Glen St. Mary, Fla.

HON. C. F. BARBER,
President State Live Stock Association, Macclenny, Fla.

DR. CHAS. F. DAWSON,
Veterinarian, State Board of Health, Jacksonville, Fla.

DR. E. H. SELLARDS,
State Geologist, Tallahassee, Fla.

CAPT. R. E. ROSE,
State Chemist, Tallahassee, Fla.

DR. E. W. BERGER,
State Nursery Inspector, Gainesville, Fla.

GENERAL STATEMENT

The College of Agriculture is intended to meet the requirements of the Acts of Congress creating and endowing colleges in the different States. From these Acts it is apparent that recognition of agriculture as a branch of collegiate instruction is a distinctive feature of the institutions thus founded. The aim of the College is to offer young men the best possible preparation for agricultural pursuits. The courses afford opportunity for gaining both technical knowledge and training in the art of agriculture. Since about one-third of the student's time is devoted to agricultural branches and the other two-thirds to the basic sciences and cultural studies, a broad foundation is laid which will enable him, upon graduation, to become either a leader in educational work or an effective producing agriculturist.

The group courses offered during the Sophomore, Junior, and Senior years afford opportunity for selecting and preparing for the phase of agriculture best suited to the qualifications and

taste of the individual students. Those who wish to pursue general farming will elect the agronomy or animal husbandry group. Those interested in fruit production or market gardening will elect the horticultural group. The chemical group will interest those who wish to become expert agricultural analysts. There is a demand for teachers competent to give instruction in agriculture, and in the years to come this demand will grow in Florida as it has grown in other agricultural States. In order to meet this need a special group has been prepared for teachers. The present demand for experienced agricultural teachers cannot be supplied; therefore agriculture forms an attractive subject for ambitious young men who contemplate teaching.

Great care should be exercised by students in the selection of a group course, for the selection should be such as to fit them best for their life work in one of the numerous lines of agriculture.

EQUIPMENT.—*Agricultural Hall.*—Agricultural Hall, the new building for the erection of which the Legislature of 1911 generously appropriated funds, provides space for department offices; for classrooms in Agronomy, Animal Husbandry and Agricultural Engineering; for laboratories in soils and fertilizers, crops and grain judging, farm machinery, farm power, stock judging, dairying, milk testing, poultry practice, etc.

The new classrooms and laboratories were specially planned to meet the needs of the instruction to be given, and a large amount of apparatus has been added that materially strengthens the work of the College.

Library.—The Agricultural Library is small but well selected, and is added to every year. The leading technical books and a fairly complete set of State Experiment Station and Government Bulletins are placed within easy reach of the students. Nearly six hundred dollars from the special Library appropriation made by the Legislature of 1911 has been recently expended for the latest technical agricultural books. The general library is also open to the students of the College.

The College Farm.—The farm connected with the College of Agriculture, used for instruction purposes and for growing crops with which to feed the instruction herds, consists of 135 acres: about 20 acres for trucking, 95 acres for pasture and general field crops, 10 acres for orchard, 7 acres for soiling

purposes and stock lots, and 3 acres for buildings and grounds, where a hay and feed barn now stands and where other buildings will be erected during the year. The Legislature of 1913 appropriated $15,00.00 for the College of Agriculture, to be expended during the biennial period on buildings and equipment. A portion of this fund will be used for the erection of a farm foreman's house, a modern dairy barn, an irrigation system illustrating the various possible and practical methods of irrigation, and a machinery shed and corn crib.

SCHOLARSHIPS.—The following scholarships in agriculture were available during 1913-1914:

Southern Railway Scholarship—William Wilson Finley Foundation, $200.

Taylor County six, and Clay County two scholarships of $25.00 each, covering the Farmers' Short Course, available for members of the Boys' Corn Clubs.

AGRICULTURAL CLUB.—Membership in the Agricultural Club, a description of which is to be found on page 38, is strongly urged upon all students of the College.

AGRONOMY DEPARTMENT

The Agronomy Department occupies four rooms—a large, well-lighted, well equipped soil laboratory, with an adjoining storage and work room, and a large crop judging laboratory, with an adjoining mouse-proof storage room for seed and forage crops.

The soil laboratory equipment comprises microscopes, sampling augers, tubes and carriers; balances, ovens, soil thermometers, packers, cylinders, and tubes; moisture absorption box with trays; percolation, capillary, and evaporation apparatus; sieves, shaker, etc. The equipment is of the best type and fully adequate for giving thorough courses in soils. There are three large stone-top desks with individual lockers for seventy-two students. The storage room is provided with soil bins, packer, cases, and shelving in abundance.

The field crop laboratory is provided with five long judging tables and the storage room for seed and forage is lined with suitable shelving.

For Agricultural Engineering work, which for the present is connected with the Agronomy Department, there are two specially

equipped laboratories—the one for farm motors and iron work, the other for farm machinery and wood work.

These laboratories are equipped with a large collection of modern labor-saving machinery, consisting of gasoline engines, windmills, feed grinders, stalk cutter, walking and riding plows, various types of harrows, walking and riding cultivators, seeders, one and two-horse corn planters, manure spreader, etc. Special stress is placed upon instruction in farm machinery, because labor-saving machinery has not yet come into general use upon Florida farms.

Donations and Loans.—The laboratories have been supplied with much of this labor-saving farm machinery for the purpose of instruction through the generosity of the following manufacturers:

The John Deere Plow Company, Atlanta, Ga.

International Harvester Company, Chicago, Ill., and Jacksonville, Fla.

Stover Manufacturing Company, Freeport, Ill.

Perkins Windmill Company, Mishawaka, Ind.

Through an agreement to carry out demonstration tests on the College farm, the J. I. Case Plow Works, Racine, Wis., has provided the farm laboratory with a complete equipment of up-to-date crop growing machinery.

ANIMAL HUSBANDRY DEPARTMENT

The Animal Husbandry Department is provided with a large lecture and judging room containing tiered seats for sixty students, and a paddock, 12x24 feet in size, with concrete floor and iron railings, for exhibiting and judging animals. The equipment includes a two-ton Fairbanks platform scale, tape lines, measuring standards, and projectors.

A basement room in Science Hall is being fitted for practice in butchering and curing of meats, in order to familiarize students with the cuts of the animal carcass and the best methods of saving meat.

The equipment in *Veterinary Science* consists of excellent mounted skeletons of the horse and cow, several wall charts on anatomy and physiology, a set of veterinary operating instruments, and sample jars of common drugs, medicines, and extracts.

For *Dairy Work,* which for the present is connected with the Animal Husbandry Department, the College has a large, well lighted laboratory. The equipment includes several makes of hand power cream separators, several patterns of swing and barrel churns, four styles of lever and hand power butter workers, two combined churn and butter workers, butter packers, shipping cases, etc.; a large Cooley creamer, starter and mixing cans, vats for cream ripening and cheese making; a milk cooler, Pasteurizer, bottling machine, storage refrigerator, creamery scales, and the necessary cans, buckets, bottles, and brushes. Two wash sinks and a sterilizer chest are installed. The entire laboratory is supplied with hot water and steam.

The milk testing laboratory contains working desks and machinery for all the modern tests of dairy products. The equipment includes Babcock testers of different sizes, cream scales, lactometers, acidmeters, butter moisture tests, and the necessary glassware, reagents, etc.

Live Stock.—The equipment in live stock is fairly well begun, and the individuals on hand are of high grade. A special fund provided by the legislature is being used to buy additional dairy cattle, sheep, and swine. The herds now include Jersey and Shorthorn cattle, Tamworth and Duroc Jersey swine; and will be increased from year to year, by breeding and as additional funds are secured for the purpose, until representatives of all the important breeds and classes of farm animals are available for use in the courses in the breeds of live stock and score card judging.

The legislature has provided funds for a sanitary concrete dairy barn, including a silo and feed mixing room, with modern stable equipment and (probably) milking machines. Through the aid of the Florida State Board of Health and the Alachua County Live Stock Club, one of the best concrete cattle dipping vats in the State has been constructed for the use of the College and the public. A number of modern pens and portable houses for hogs, with equipment suitable to Southern conditions, are being built.

A poultry plant, including several colony houses and yards, has been started, and is already well equipped with incubators, brooders, pens, coops, feed troughs, and fixtures. A number of the leading poultry breeders of the State are aiding the Depart-

ment by sending breeding pens of prize winning poultry to the College for exhibit and for judging purposes.

HORTICULTURAL DEPARTMENT

The Horticultural Department occupies for the present quarters in Science Hall. Laboratories where various kinds of indoor work may be done are here provided. The propagation work is done in a propagating house and nursery, where stratification, layerage, cuttage, budding, grafting, and other operations with plants are carried on. Trees of different ages and varieties are growing in the orchard, and the number of these will be increased as the work develops. Cold frames and covers for starting young plants and for growing certain tender vegetables to maturity in winter are used in trucking. An irrigation plant is being installed in the trucking area. It includes several different types adapted to Florida conditions.

COURSES OFFERED

The following courses are offered:

1. A Four-Year Course.
2. A Middle Course of Two Years.
3. A One-Year Course.
4. Two Four-Month Courses.
5. A Ten-Day Short Course for Farmers.
6. Fourteen Correspondence Courses for Home Study.

FOUR-YEAR COURSE

Entrance Requirements.—A detailed description of the entrance requirements for admission to the four-year course of the College of Agriculture will be found on pages 39 to 46, inclusive.

While one unit of agriculture is required, owing to the fact that agriculture has been so recently included in the curriculum of the public high schools by legislative enactment, candidates will be allowed to take the agricultural work in which they are deficient during the Freshman year.

Degrees.—The regular four-year course culminating in one of the five groups—Agronomy, Horticulture, Animal Husbandry, Agricultural-Chemical, or Agricultural-Normal—leads to the degree of Bachelor of Science in Agriculture (B. S. A.). One year of additional work leads to the degree of Master of Science in Agriculture (M. S. A.).

Credits for Practical Work.—Students who, by previous

agreement with the head of a department and the Dean, do practical work, during their course of study, on farms, in groves, nurseries, dairies, or breeding establishments; in syrup, sugar, or canning factories; or in other recognized agricultural lines, and who render competent and faithful service, will, on their return to College and on the presentation of a concise written report or résumé of their observations and experience, be entitled to one semester hour credit for each month of such work. Such credit shall not total more than six semester hours in the two-year and four-year courses. Students must have at least three months of practical work before graduation, but credit will be given for such work only as stated above.

Remunerative and Instructive Labor.—Students are afforded opportunity to do considerable work in the fields and truck gardens, about the barns, and in the buildings. Some careful and industrious students secure work in the Agricultural Experiment Station. The compensation for services of this nature usually ranges from eight to twenty cents per hour, according to the experience of the student and the nature of the work. Every year several students are enabled not only to earn part of their expenses but also to strengthen their education by the practical knowledge thus gained. Students who during vacation periods find employment on farms and in other positions allied to agriculture will be markedly benefited and after graduation will be able to command more desirable and remunerative positions, or will find their efforts on the farm more effective. In this connection emphasis should be placed upon a thorough understanding of the practical application of scientific principles.

Laboratory Work.—Two hours of laboratory work are given one hour credit in estimating the total number of hours in the following courses:

CURRICULUM

Leading to the Degree of Bachelor of Science in Agriculture

FOR ALL GROUPS

Freshman Year

Names of Courses	Nature of Work	*Hours Per Week	
Agronomy I	Soil Physics	2	2
Horticulture I	Plant Propagation	2	0
Horticulture II	Greenhouse Management	0	2
Animal Husbandry I	Types and Breeds of Animals	2	2
Agricultural Engineering I	Farm Machinery and Farm Motors	2	2
Botany I	General Botany	3	3
English I	Advanced College Rhetoric	3	3
Mathematics B	Plane Trigonometry	2	2
Agricultural Seminar		1	1
†Library Work		R	R
Military Science I	Drill and Firing Regulations	1	1
		18	18

FOR ALL GROUPS EXCEPT ANIMAL HUSBANDRY

Sophomore Year

Names of Courses	Nature of Work	*Hours Per Week	
Agronomy II	Fertilizers	0	3
Horticulture III	Trucking	2	2
Chemistry I-II	General Inorganic Chemistry	5	5
Botany II	Plant Physiology	3	0
Zoology I	General Zoology	3	0
Zoology III	Entomology	0	3
Military Science II	Field Regulations and Guard Duty	1	1
Elective		2	2
		16	16

*The first column gives the hours per week for the first semester, the second column the hours per week for the second semester.

†A total of sixteen actual hours of Library Work required.

AGRONOMY GROUP

Junior Year

Names of Courses	NATURE OF WORK	*Hours Per Week	
Agronomy III	Field Crops	3	0
Agronomy IV	Forage Crops and Grasses	0	2
Agronomy V	Rural Law and Farm Accounts	0	3
Chemistry III*a*	Qualitative Analysis	3	0
Chemistry VII*b*	Quantitative Analysis	0	3
Botany IV	Plant Pathology	3	0
Bacteriology I	General Bacteriology	3	0
Bacteriology II	Agricultural Bacteriology	0	3
Elective		4	5
		16	16

Senior Year

Agronomy VI	Farm Management	0	2
Horticulture X	Landscape Gardening	0	2
Agricultural Engineering II	Buildings, Roads, Irrigation and Drainage	3	0
Chemistry VIII	Chemistry of Soils, Fertilizers, etc.	3	0
Sociology III and Economics III or Economics I	Rural Sociology / Agricultural Economics / Principles of Economics	3	3
Agricultural Education I	Extension Teaching	0	2
Elective		7	7
		16	16

Note.—The elective hours may, with the approval of the Dean, be chosen from the other groups or from other colleges.

HORTICULTURAL GROUP

Junior Year

Names of Courses	NATURE OF WORK	*Hours Per Week	
Horticulture IV	Citrus Culture	3	0
Horticulture V	Citrus Harvesting and Marketing	0	2
Horticulture VII	Deciduous Fruits	3	0
Horticulture VIII	Plant Breding	0	3
Agronomy V	Rural Law and Farm Accounts	0	3
Botany IV	Plant Pathology	3	0
Bacteriology I	General Bacteriology	3	0
Bacteriology II	Agricultural Bacteriology	0	3
Elective		4	5
		16	16

*The first column gives the hours per week for the first semester, the second column the hours per week for the second semester.

Senior Year

Names of Courses	Nature of Work	*Hours Per Week	
Horticulture X	Landscape Gardening	0	2
Horticulture VI or Horticulture IX	Insects and Diseases of Citrus Fruits / Forestry	3	0
Agronomy VI	Farm Management	0	2
Agricultural Engineering II	Buildings, Roads, Irrigation and Drainage	3	0
Agricultural Education I	Extension Teaching	0	2
Chemistry IX	Chemistry of Soils, Fertilizers, etc.	3	0
Sociology III and Economics III or Economics I	Rural Sociology / Agricultural Economics / Principles of Economics	3	3
Elective		4	7
		16	16

AGRICULTURAL-CHEMICAL GROUP

Junior Year

Names of Courses	Nature of Work	*Hours Per Week	
Chemistry IV	Qualitative Analysis	5	5
Chemistry V	Organic Chemistry	3	3
Bacteriology I	General Bacteriology	3	0
Bacteriology II	Agricultural Bacteriology	0	3
Elective		5	5
		16	16

Senior Year

Chemistry VIII	Quantitative Analysis	7	7
Economics I	Principles of Economics	3	3
Elective		6	6
		16	16

*The first column gives the hours per week for the first semester, the second column the hours per week for the second semester.

AGRICULTURAL-NORMAL GROUP

Junior Year

Names of Courses	Nature of Work	*Hours Per Week	
Education I	Psychology	3	0
Education II	General Methods	0	3
Education IIIa	Special Methods	3	0
Education IV	School Management and Supervision	0	3
Agronomy III	Field Crops	3	0
Agronomy V	Rural Law and Farm Accounts	0	3
Horticulture IV	Citrus Culture	3	0
Horticulture V	Citrus Harvesting and Marketing	0	2
Animal Husbandry II	Animal Feeding	3	0
Animal Husbandry III	Animal Breeding	0	3
Elective		1	2
		16	16

Senior Year

Education V	History of Education	3	0
Education VI	Secondary Education	0	3
Education VII	Principles and Philosophy of Education	3	3
Agricultural Education I	Methods of Teaching Agriculture	1	0
Agricultural Education II	Extension Teaching	0	2
Agronomy VI	Farm Management	0	2
Agricultural Engineering II	Buildings, Roads, Irrigation and Drainage	3	0
Economics III	Agricultural Economics	0	3
Sociology III	Rural Sociology	3	0
Elective		3	3
		16	16

ANIMAL HUSBANDRY GROUP

Sophomore Year

Names of Courses	Nature of Work	*Hours Per Week	
Animal Husbandry II	Animal Feeding	3	0
Animal Husbandry III	Animal Breeding	0	3
Dairying I	Dairy Testing	2	0
Dairying II	Farm Buttermaking	0	2
Chemistry I-II	General Inorganic Chemistry	5	5
Zoology I	General Zoology	3	3
Military Science II	Field Regulations and Guard Duty	1	1
Elective		2	2
		16	16

*The first column gives the hours per week for the first semester, the second column the hours per week for the second semester.

Junior Year

Names of Courses	Nature of Work	*Hours Per Week	
Animal Husbandry IV	Beef Production	2	0
Animal Husbandry V	Swine Production	0	2
Animal Husbandry VI	Animal Hygiene	3	0
Animal Husbandry VII	Animal Diseases	0	3
Agronomy III	Field Crops	3	0
Agronomy IV	Forage Crops and Grasses	0	2
Bacteriology I	General Bacteriology	3	0
Bacteriology II	Agricultural Bacteriology	0	3
Elective		5	6
		16	16

Senior Year

Animal Husbandry VIII	Poultry Culture	2	0
Animal Husbandry IX	Seminar	0	2
Dairying III	Dairy Farming	2	0
Dairying IV	City Milk Supply	0	2
Agronomy VI	Farm Management	0	2
Agricultural Engineering II	Buildings, Roads, Irrigation and Drainage	3	0
Sociology III and Economics III or Economics I	Rural Sociology / Agricultural Economics / Principles of Economics	3	3
Elective		6	7
		16	16

*The first column gives the hours per week for the first semester, the second column the hours per week for the second semester.

DEPARTMENTS OF INSTRUCTION

AGRONOMY AND AGRICULTURAL ENGINEERING

Professor Vernon
Mr. Duggar
Mr. Martini

AGRONOMY

Agronomy is the science and art of crop production. It includes—Soils: Classification, fertility, cultivation, and improvement; Crops: Classification, production, and improvement; and Management: The application of economic business methods to farm practices.

The laboratory work and field observations aim to fix the principles learned in the class room and to give them practical application.

AGRONOMY A*a*.—*Elements of Agronomy.*—A study of soils and soil fertility in their relations to plant growth, and the underlying principles governing the production of field and forage crops. (*Eleventh Grade, Practice High School, Teachers College; 3 hours.*)

AGRONOMY I.—*Soil Physics.*—The origin, formation, classification, moisture, ventilation, temperature of soils; general methods of soil management and amelioration, etc. (*Freshman year; 2 hours.*)

AGRONOMY II*b*.—*Fertilizers.*—The nature of plant food and its relation to the composition of soils, sources and composition of commercial fertilizers and principles governing their application, the making and economical use of farm manures, fertilizer requirements of various crops, and other related topics. (*Sophomore year; 3 hours.*)

AGRONOMY III*a*.—*Field Crops.*—The various grain, fiber, and sugar crops will be discussed with respect to their habits of growth, soil adaptations, fertilizer requirements, general methods of tillage and harvesting, and the most profitable forms

*The letter *a* after a numeral indicates that the course is given during the first semester, the letter *b* during the second semester. Where neither *a* nor *b* appears, the course, unless otherwise explained, continues throughout the year.

in which to market them. Special attention will be given to corn, cotton, and sugar cane. (*Junior year; class 2 hours, Laboratory 2 hours; credit 3 hours.*)

AGRONOMY IV*b*.—*Forage Crops and Grasses.*— A study will be made of forage crops and grasses, including an investigation into their adaptability to the various Florida soils, seeding and cultural methods, harvesting and storing, composition and use, illustrated by specimens brought before the students and by field observations. (*Junior year; Class 1 hour, Laboratory 2 hours; Credit 2 hours.*)

AGRONOMY V*b*.—*Rural Law and Farm Accounts.*—Classification of property, boundaries, fences, stock laws, rents, contracts, deeds, mortgages, taxes, laws governing shipping, and other topics of special interest to farmers will be treated; and a system of farm bookkeeping will be worked out, using the transactions of the College farm as a basis for material for instruction. (*Junior year; 3 hours.*)

AGRONOMY VI*b*.—*Farm Management.*—A study of the principles underlying farm management; specialized and general farming; problems of labor, machinery, storing, marketing; laying out farms, systems of rotation, etc. (*Senior year; 2 hours.*)

AGRICULTURAL ENGINEERING

AGRICULTURAL ENGINEERING A*b*.—*Elements of Agricultural Engineering.*—A study of farm machinery and farm motors, irrigation, drainage, buildings, sanitation, roads, fences, etc., elements essential to profitable plant and animal production and the making and maintenance of comfortable, healthful homes. (*Twelfth grade, Practice High School, Teachers College; 3 hours.*)

AGRICULTURAL ENGINEERING I.—*Farm Machinery.*—The course includes a study of the history of the development, details of construction, functions, methods of operation, and care of the various forms of tillage, seeding, and harvesting machinery. Special attention is given to plows, harrows, seeders and drills, corn and Irish potato planters, cultivators and weeders, mowers and rakes, potato diggers, spraying machines, and vehicles.

Farm Motors.—A study of farm power, water power, horse powers, windmills; water, air, and oil cooled internal-combustion

engines—stationary, portable and tractors—using gas, gasoline, naphtha, kerosene or crude oil as fuel; steam engines —stationary and traction, in their relation and application to farm work. (*Freshman year; Class* 1 *hour, Laboratory* 2 *hours; Credit* 2 *hours.*)

AGRICULTURAL ENGINEERING II*a.*—*Buildings, Roads, Irrigation and Drainage.*—Such topics as the construction of farm residences, barns and other farm buildings; the laying out of roads and fields; underdrainage; and irrigation plants will be considered, and the students will be given practice in drawing plans and writing specifications. (*Senior year;* 3 *hours.*)

AGRICULTURAL EDUCATION

Professor Vernon
Professor McQuarrie

AGRICULTURAL EDUCATION I*a*—*Methods of Teaching Agriculture.*—A special course of lectures in methods of presenting agricultural subjects. It will include materials and laboratory usage. (*Senior Year;* 1 *hour.*)

AGRICULTURAL EDUCATION II*b.*—*Extension Teaching.*—A course of lectures covering the history, methods, purposes, and results of extension teaching. (*Senior Year;* 2 *hours.*)

AGRICULTURAL SEMINAR.—Subjects will be arranged on the approval of the Dean. (*Freshman Year;* 1 *hour.*)

HORTICULTURE

Professor Floyd

Horticulture is applied to the cultivation of useful and ornamental garden plants and orchard fruits. These are the plants most intimately associated with the private life of the home. In a sub-tropical climate unusual opportunities for practical effort and interesting study are presented. The wonderful variety of plants, the peculiar problems involved in their growth and development, and the accomplishments of those who have given time and labor to the solution of those problems, offer inviting fields for study and experimentation. Both the practical and the æsthetic tendencies may be cultivated.

The department with its orchard, garden, laboratory, and library offers fine opportunity for instruction, experiment, and research.

HORTICULTURE A*b*.—*Elements of Horticulture*.—A study of varieties and culture requirements of our principal fruits and vegetables; location of orchards and gardens with reference to soils, climate, and markets; protection from insects and diseases; harvesting and marketing; styles of decorative planting adapted to home and school. (*Eleventh Grade, Practice High School, Teachers College; 3 hours.*)

HORTICULTURE I*a*.—*Plant Propagation*.—Study and practice in propagation by means of division, cutting, layering, budding, and grafting; seed selection, storing, and testing, and the fundamental physiological processes. (*Freshman year; 2 hours.*)

HORTICULTURE II*b*.—*Greenhouse Management*.—This includes the construction, heating, planting, and care of greenhouses, veranda greenhouses, the growing of ornamentals, and forcing of vegetables. (*Freshman year; 2 hours.*)

HORTICULTURE III.—*Trucking*.—This course includes a study of the vegetables adapted to Florida, the seasons in which they are grown, cultural methods, fertilizing, irrigating, packing, and marketing. (*Sophomore year; 2 hours.*)

HORTICULTURE IV*a*.—*Citrus Culture*.—This embraces a study of suitable soils for citrus groves, their preparation, planting, cultivation, fertilization, selection of varieties, and the use of cover crops. (*Junior year; 3 hours.*)

HORTICULTURE V*b*.—*Citrus Harvesting and Marketing*.—This includes methods of picking, handling, washing, drying, packing, shipping, and storing citrus fruits. Attention will also be given to identifying the leading commercial varieties and judging by the use of the score card. (*Junior year; 2 hours.*)

HORTICULTURE VI*a*.—*Insects and Diseases of Citrus Fruits*.—A study of the injurious insects, and of important physiological and fungus diseases and their treatment. (*Senior year; 3 hours.*)

HORTICULTURE VII*a*.—*Deciduous Fruits*.—A study of the growing of peaches, plums, pears, persimmons, grapes, pecans, etc., the varieties adapted to the State, their planting, cultivation, diseases, and insect enemies. (*Junior year; 3 hours.*)

HORTICULTURE VIII*b*.—*Plant Breeding*.—Cross pollination and hybridization of plants, improvement by selection, breeding for special qualities, with field work and a study of the methods of successful breeders, are included. (*Junior year; 3 hours.*)

HORTICULTURE IX*a*.—*Forestry*.—The principles of forestry, forest cropping, protecting the home wood lot, use of Florida woods, varieties of timber trees, and the influences of the forests on the other industries of the State. (*Junior or Senior year; 3 hours.*)

HORTICULTURE X*b*.—*Landscape Gardening*.—The principles underlying the various styles of landscape gardening, plants suitable for planting, improvement of the home grounds, making more attractive school and public grounds, are some of the topics studied. (*Senior year; 2 hours.*)

HORTICULTURE XI*b*.—*Development of American Horticulture*.—An historical study of the development of American Horticulture. (*Junior or Senior year; 2 hours.*)

ANIMAL HUSBANDRY AND DAIRYING

Professor Willoughby

ANIMAL HUSBANDRY

Animal Husbandry includes subjects relating to the domestic animals, their history, classification, and judging; breeding, selection, and improvement: feeding, care, and management; the production and marketing of beef, pork, and other animal products; and the prevention and treatment of ordinary diseases of farm animals.

Live stock raising commands a steady income and is a most valuable aid in maintaining soil fertility. Since this industry will become an important factor in the general prosperity of the State, the instruction is being broadened and equipment enlarged as rapidly as funds will permit. The underlying principles are applicable to all parts of America, and additional special instruction is given for southeastern conditions.

ANIMAL HUSBANDRY A*a*.—*Elements of Animal Husbandry*.—Brief study of types and breeds of farm animals, with some judging practice; principles of breeding, feeding, and management; production of meat, milk, and poultry. (*Practice High School, Teachers College, Twelfth Grade, 3 hours.*)

ANIMAL HUSBANDRY I.—*Types and Breeds of Animals*.—The various types and classes of farm animals; practice in score card and comparative judging; history and utility of the leading breeds. Horses, mules, and swine will be studied in the first

semester; cattle, sheep, and goats in the second. Animals upon the College Farm will be used for judging purposes, and occasional trips will be made to nearby stock farms and stables. (*Freshman year; 2 hours.*)

ANIMAL HUSBANDRY II*a*.—*Animal Feeding.*—The relation of plants to animal life; digestion and assimilation, the formation of animal tissues from nutrients in feeds; feed analyses, digestion coefficients, and feeding standards; practice in compounding and balancing rations for various farm animals under different conditions. (*Sophomore year; 3 hours.*)

ANIMAL HUSBANDRY III*b*.—*Animal Breeding.*—Principles underlying the breeding of animals, including heredity, variation, environment, natural and artificial selection; application of breeding principles to the foundation and management of a breeding herd; value of pedigrees and performance records. (*Sophomore year; 3 hours.*)

ANIMAL HUSBANDRY IV*a*.—*Beef Production.*—Practical methods in beef production, including selection of feeders, feeding, and management of beef cattle, finishing and marketing, slaughter and packing-house methods. Brief consideration of same subjects in mutton production will be included. (*Junior year; 2 hours.*)

ANIMAL HUSBANDRY V*b*.—*Swine Production.*—Location and equipment of a hog farm, breeds of swine suited to the South, raising young stock; growing feeds for grazing and fattening, feeding and managing the herd; marketing and slaughtering, curing meats on the farm. (*Junior year; 2 hours.*)

ANIMAL HUSBANDRY VI*a*.—*Animal Hygiene.*—Elements of anatomy and physiology; care and training of young animals, prevention of disease, disinfection, sanitation; symptoms and treatment of common sporadic diseases of animals. (*Junior year; 3 hours.*)

ANIMAL HUSBANDRY VII*b*.—*Animal Diseases.*—Symptoms and treatment of contagious and infectious diseases; simple surgical operations for the farm, castration, dehorning; properties and action of medicines suitable for farm use; occasional clinics as opportunity is offered. (*Junior year; 3 hours.*)

ANIMAL HUSBANDRY VIII*a*.—*Poultry Culture.*—Location and construction of houses and runs; the principal breeds of poultry, with judging of best specimens obtainable; methods of breeding,

incubation and brooding; egg production; feeding and marketing poultry; management of flock and treatment of diseases. (*Senior year; 2 hours.*)

ANIMAL HUSBANDRY IX*b*.—*Seminar*.—Special topics in animal industry, including essays and reports; preparation of articles for agricultural papers and answers to local problems; monograph and bulletin work. (*Senior year; 2 hours.*)

ANIMAL HUSBANDRY X*a*.—*Animal Conformation*.—Detailed study of form and characteristics of animal breeds and types, including measurements and relations of structure with special reference to utility. (*Elective for Juniors, Seniors, and Graduates; 2 hours.*)

ANIMAL HUSBANDRY XI*b*.—*Animal Nutrition*.—Advanced work in the principles of animal nutrition, including digestion, metabolism, calorimetry, utilization of nutrients for various purposes. (*Prerequisite* II*a; Elective for Juniors, Seniors, and Graduates; 2 hours.*)

ANIMAL HUSBANDRY XII*a*.—*Breeding History*.—Advanced work in the history of breeds and breeders; tabulation of pedigrees; principles of thremmatology. (*Prerequisite* III*b; Elective for Juniors, Seniors, and Graduates; 2 hours.*)

ANIMAL HUSBANDRY XIII*b*.—*Poultry Practice*.—Advanced study and practice in the feeding and management of poultry; principles of incubation; development of embryo and chick; brooder methods, broiler production, caponizing; advanced judging work. (*Prerequisite* VIII*a; elective for Seniors and Graduates; 2 hours.*)

DAIRYING

Dairying includes the production of milk, its composition and testing; sanitary handling and marketing; the manufacture of butter, cheese, and ice cream; factory management and accounting.

The opportunities in the South for supplying dairy products at good prices are practically unlimited, while under proper management the cost of production is lower than in other sections. It is believed this industry will enlarge as its possibilities become better understood, thus saving for the citizens of Florida the large sums that are now being sent to other States for dairy products.

DAIRYING I*a*.—*Dairy Testing*.—Secretion, composition, and

properties of milk; testing milk and its products by the Babcock method, lactometer, and acidmeter; moisture tests for butter; scoring dairy products. (*Sophomore year; 2 hours.*)

DAIRYING II*b*.—*Farm Buttermaking.*—Methods of creaming, operation and care of cream separators; ripening cream and use of starters; churning, manufacturing, and marketing butter. (*Sophomore year; 2 hours.*)

DAIRYING III*a*.—*Dairy Farming.*—Locations suitable for dairy farming; construction of sanitary barns, dairy houses, silos; selection of breeds, feeding and management of the dairy herd, testing and herd records; pastures, soiling crops, and silage; marketing dairy products. (*Senior year; 2 hours.*)

DAIRYING IV*b*.—*City Milk Supply.*—Methods of producing sanitary milk, transportation and marketing, city milk inspection; Pasteurization and care of milk in the home; score cards for dairy and milk depots; milk and cream contests. (*Senior year; 2 hours.*)

DAIRYING V.—*Dairy Manufactures.*—Advanced work in making butter, cottage and Cheddar cheese, fermented milks, ice cream, and various market products; creamery management and accounting. (*Prerequisites, Dairying Ia and IIb; elective for Juniors, Seniors, and Graduates; 2 hours.*)

OTHER DEPARTMENTS

In order to avoid repetition, detailed descriptions of the required and elective subjects in other departments of the College of Agriculture are not printed here. The number of the page on which any desired subject appears will be found in the Index at the end of the catalogue.

MIDDLE COURSE IN AGRICULTURE

For the convenience and accommodation of those who cannot meet the requirements for entrance to the Freshmen year, or who may not wish to pursue a four-year college course and yet desire to obtain thorough training in practical and scientific agriculture, a two-year course is offered. The course is not designed to supplant or in any way to be a substitute for the regular college course as outlined above.

Entrance Requirements.—The entrance requirements for admission to the Middle Course are:

English	2 units
Mathematics	2 units
History	1 unit
Elective	3 units
	8 units

These requirements are equivalent to the work completed in the tenth grade or junior high schools. Students must be at least sixteen years of age to be admitted.

Title.—The title of Graduate in Farming (G.F.) will be conferred upon students who satisfy the entrance requirements and complete the Middle Course in Agriculture.

Those who cannot satisfy these entrance requirements may be admitted to the Middle Course upon showing a good knowledge of the common school branches, and will be awarded a certificate for the work done.

MIDDLE COURSE

Leading to the Title of Graduate in Farming

First Year

Names of Courses	Nature of Work	Hours Per Week
(First Semester)		
Agronomy A	Elements of Agronomy	3
Agronomy I	Soil Physics	2
Animal Husbandry A	Elements of Animal Husbandry	3
Agricultural Engineering I	Farm Machinery	2
Agricultural Seminar		1
*Library Work		R
**Military Drill		R
Elective		7
		18
(Second Semester)		
Agronomy I	Soil Physics	2
Horticulture A	Elements of Horticulture	3
Agricultural Engineering I	Farm Motors	2
Agricultural Seminar		1
*Library Work		R
**Military Drill		R
Elective		10
		18

*A total of 16 actual hours of Library Work required.
**Attendance upon Military Drill is required.

Second Year

Names of Courses	Nature of Work	Hours Per Week
(First Semester)		
Agronomy III	Field Crops	3
Horticulture I	Plant Propagation	2
Horticulture III	Trucking	2
Animal Husbandry I	Types and Breeds of Animals	2
Animal Husbandry VIII	Poultry Culture	2
**Military Drill		R
Elective		7
		18
(Second Semester)		
Agronomy II	Fertilizers	3
Agronomy V	Rural Law and Farm Accounts	3
Horticulture III	Trucking	2
Animal Husbandry I	Types and Breeds of Animals	2
**Military Drill		R
Elective		8
		18
Elective Studies:		
(First Semester)		
Horticulture IV	Citrus Culture	3
Horticulture VI	Insects and Diseases of Citrus Fruits	3
Horticulture VII	Deciduous Fruits	3
Horticulture IX	Forestry	3
Animal Husbandry II	Animal Feeding	3
Animal Husbandry IV	Beef Production	2
Animal Husbandry VI	Animal Hygiene	3
Dairying I	Dairy Testing	2
Dairying III	Dairy Farming	2
Agricultural Engineering II	Buildings, Roads, Irrigation and Drainage	3
(Second Semester)		
Agronomy IV	Forage Crops and Grasses	2
Agronomy VI	Farm Management	2
Horticulture II	Greenhouse Management	2
Horticulture V	Citrus Harvesting and Marketing	2
Horticulture VIII	Plant Breeding	3
Horticulture X	Landscape Gardening	2
Horticulture XI	Development of American Horticulture	2
Animal Husbandry III	Animal Breeding	3
Animal Husbandry V	Swine Production	2
Animal Husbandry VII	Animal Diseases	3
Dairying II	Farm Buttermaking	2
Dairying IV	City Milk Supply	2
Agricultural Education II	Extension Teaching	2

Note.—Students shall choose from these elective studies, from other courses, or from the Practice High School of the Teachers College, a sufficient number to make a total of not less than sixteen nor more than eighteen hours per week. Choice of electives must be approved by the Dean.

**Attendance upon Military Drill is required.

SHORT COURSES IN AGRICULTURE

J. J. Vernon, M. S. A., Director

Practically all of the agricultural colleges of the United States have found short courses necessary in order to reach a large class of young farmers and prospective farmers. It has seemed unwise to withhold from this deserving class of wealth producers the advantages of the equipment and instruction generously provided by the Government and State appropriations Men who have completed a high school course are fitted to enter the regular college course. In the Middle and Short Courses the same advantages are thrown open to those who cannot enter the Long course, and the results obtained indicate the wisdom of the step. Since the value of such courses has been satisfactorily demonstrated the courses outlined below are offered, designed to meet the varying needs of the farmer.

Certificates.—Certificates will be granted to those who complete any of the Short Courses.

ONE-YEAR COURSE IN AGRICULTURE

This course will meet the needs of those who can spend only one year at school. The only requirement for admission is a good knowledge of the common school branches.

Names of Courses	Nature of Work	Hours Per Week
(First Semester)		
Agronomy A	Elements of Agronomy	3
Agronomy I	Soil Physics	2
Agronomy III	Field Crops	3
Horticulture I	Plant Propagation	2
Horticulture III	Trucking	2
Horticulture IV	Citrus Culture	3
Horticulture VI	Insects and Diseases of Citrus Fruits	3
Horticulture VII	Deciduous Fruits	3
Animal Husbandry A	Elements of Animal Husbandry	3
Animal Husbandry I	Types and Breeds of Animals	2
Animal Husbandry II	Animal Feeding	3
Animal Husbandry IV	Beef Production	2
Animal Husbandry VI	Animal Hygiene	3
Animal Husbandry VIII	Poultry Culture	2
Dairying I	Dairy Testing	2
Dairying III	Dairy Farming	2
Agricultural Engineering I	Farm Machinery	2
Agricultural Engineering II	Buildings, Roads, Irrigation and Drainage	3
Agricultural Seminar		1
*Military Drill		R

*Attendance upon Military Drill is required.

Names of Courses	Nature of Work	Hours Per Week
(Second Semester)		
Agronomy I	Soil Physics	2
Agronomy II	Fertilizers	3
Agronomy IV	Forage Crops and Grasses	2
Agronomy V	Rural Law and Farm Accounts	3
Agronomy VI	Farm Management	2
Horticulture A	Elements of Horticulture	3
Horticulture II	Green-house Management	2
Horticulture III	Trucking	2
Horticulture V	Citrus Harvesting and Marketing	2
Horticulture X	Landscape Gardening	2
Animal Husbandry I	Types and Breeds of Animals	2
Animal Husbandry V	Swine Production	2
Animal Husbandry VII	Animal Diseases	3
Dairying II	Farm Buttermaking	2
Dairying IV	City Milk Supply	2
Agricultural Engineering I	Farm Motors	2
Agricultural Seminar		1
*Military Drill		R

Note.—Students shall select not less than sixteen nor more than eighteen hours per week, except on approval of the Dean.

FOUR-MONTH SHORT COURSES IN AGRICULTURE FOR FARMERS

The work of each semester of the One-Year Course outlined above has been so planned as to form of itself a well rounded course of study which can be pursued to great advantage by those who are unable to spend more than four months at the University. Each of these Four-Month Short Courses, one of which begins on September 23, 1914, and the other on February 3, 1915, should appeal to practical farmers who wish to increase their productive power, to young men who expect to become farmers, and to those who are turning from other lines of work in order to possess land and obtain the advantages of country life.

Military Drill is not required of those who take only one of these courses, but is required of those who take both during the same scholastic year. Under "Types and Breeds of Animals," Horses, Mules, and Swine are studied in the first course; Cattle, Sheep, and Goats in the second.

TEN-DAY SHORT COURSE IN AGRICULTURE FOR FARMERS

Beginning January 12, 1915 and ending January 22, 1915.

The Ten-Day Farmers' Short Course in Agriculture is offered to meet the needs of those who for any reason cannot pursue a

*Attendance upon Military Drill is required.

longer course. It is especially suited to two classes: First, busy farmers of all ages who, recognizing their needs for better preparation, earnestly desire more knowledge of scientific agriculture in order to render more effective the practical knowledge they have already gained; and second, ambitious young men who are compelled to drop out of school and yet desire to devote a short time to special preparation for their lifework upon the farm.

There are no age limits and no educational requirements for entrance to the Farmers' Short Course.

The course will consist of lectures, laboratory work, and field observation and demonstration. Trips of inspection will be made to large truck and stock farms in the vicinity of the University, and successful farmers will be called before the classes occasionally for the purpose of explaining their methods.

The laboratory equipment, the thoroughbred stock, and the farm used in the regular courses will be available for instruction in the Short Courses. The Agricultural Experiment Station, located at the University, will afford opportunity for observation and inquiry. Special care has been taken that the Farmers' Short Course should be arranged throughout to meet the needs and suit the conditions of the practical farmer.

Subjects for the Farmers' Short Course in Agriculture will be selected each year from the following list in accordance with the special needs of the students:

Principles of Agriculture.
Soils.
Soil Laboratory.
Fertilizers.
  a. Chemical.
  b. Experimental.
  c. Practical.
Field Crops.
  a. General.
  b. Special.
  c. Experimental.
Crop Judging.
Agricultural Engineering.
  a. Farm Machinery.
  b. Farm Motors.
  c. Buildings, Fences and Roads.
  d. Drainage and Irrigation.
Plant Propagation.
Citrus Fruits and Citrus Culture.
Trucking.
  a. Crops.
  b. Marketing.
  c. Protection.
Types and Breeds of Live Stock.
Poultry Raising.
Stock Judging.
Animal Breeding.
Feeds and Feeding.
Dairying.
  a. Home Dairy.
  b. Feeding, Care and Management of the Dairy Herd.
Injurious Insects.
Plant Diseases.
Farm Bacteriology.
Farm Chemistry.
Library Research.

Expenses.—The necessary expenses for the Farmers' Short Course for those who board and room at the University are as follows:

Board, room, heat and light for eleven days	$ 6.00
Laundry and incidentals (estimated)	1.00
Tuition	0.00
Total	$ 7.00

The rooms in the dormitories of the University are supplied with the necessary furniture, but each student is required to bring with him sufficient bedding for his own use.

The necessary expenses for the Farmers' Short Course for those who board and room in Gainesville are as follows:

Board, room, etc.	$ 8.00
Laundry and incidentals (estimated)	1.00
Tuition	0.00
Total	$ 9.00

The Ten-Day Short Course in Agriculture will be open to Corn Club Boys, but all boys under sixteen years of age will be required to secure room and board in Gainesville. Through the ministers of Gainesville accommodations have been pledged for the Corn Club Boys in the homes of church members.

AGRICULTURAL MEETINGS

The Dean of the College of Agriculture is authorized by the President of the University to extend a cordial invitation to all Agricultural societies or similar organizations in the State to use the College of Agriculture as the place for their meetings.

Some of the meetings held recently at the College include:

Seventh Annual Convention of the Florida Division of the Farmers' Educational and Co-operative Union, July 16 and 17, 1913.

Fourth Annual Citrus Seminar, under auspices of the University Extension Division, October 13 to 16, 1913.

Second Annual Convention of the Florida State Live Stock Association, December 16-18, 1913.

CORRESPONDENCE COURSES

The Legislature of 1909 authorized instruction in agriculture in the public schools of Florida, and, therefore, all who choose farming in the future will have an opportunity of gaining some training designed to fit for life upon the farm. Few who are

now engaged in agricultural pursuits have had such an opportunity. Recognizing this, the College is striving in every way possible to carry its benefits to every section of the State. By means of correspondence courses it hopes to reach a large number who have heretofore been unable to gain both scientific knowledge and practical training.

Correspondence courses are not as effective as resident study, but they are far better than no educational advantages. They lack the personal factor of the instructor, and most of the benefits of laboratory work and illustrative equipment. On the other hand, with ambitious and industrious persons, such courses develop independence of thought and effective individuality of action.

Registration for any of the courses offered may be made at any time during the year. The work may be pursued as rapidly or as slowly as other duties permit. To cover office expenses a registration fee of $1.00 will be charged for each course. The instruction in all cases will be free. Those registering for a course will be required to provide themselves with a text-book and to pay the postage on all manuscripts to and from the University.

The courses, it is hoped, will eventually cover all phases of rural activity. Only white persons will be accepted. Colored persons are referred to the Agricultural and Mechanical College for Negroes at Tallahassee.

(A) *For Teachers.*—The Correspondence Course in Agriculture for Teachers begins October 1, 1914, and ends June 1, 1915, and is open to any person connected with or interested in the educational work of the State. It aims to prepare for examinations in elementary agriculture for teachers' certificates, and to fit teachers for giving instruction in nature study and agriculture in the public schools. The work will consist of text-book study and experimental exercises. In order to approximate classroom results, rather elaborate lists of questions, each question embodying in most cases only one idea, will be issued on every lesson. The answers to these questions will be corrected, errors fully explained, and the manuscripts returned.

The course is based upon the text-book adopted by the State Superintendent of Public Instruction. Other necessary literature is furnished by the University free. An outlay of about 50

cents for equipment for experimental exercises will be necessary.

(B) *For Farmers.*—The following courses are offered for 1914-1915:

1. Elementary Agriculture.
2. Soils.
3. Tillage.
4. Drainage and Irrigation.
5. Manures and Fertilizers.
6. Field Crops (General).
7. Field Crops (Southern).
8. Types and Breeds of Live Stock.
9. Dairy Husbandry.
10. Poultry Husbandry.
11. Animal Breeding.
12. Feeds and Feeding.
13. Citrus Fruits and Citrus Culture.
14. Trucking.

Any course in the list may be selected. It is usually best to pursue one course at a time, upon the completion of which another may be started, although a logical order should be followed. A succession of courses covering two or more years affords opportunity to acquire during leisure moments a knowledge of agricultural science.

For further information, address J. J. Vernon, Dean of the College of Agriculture, University of Florida, Gainesville, Florida. Blanks for registration will be sent upon request.

COLLEGE OF ENGINEERING

FACULTY

ALBERT A. MURPHREE, A.M., LL.D.,
President of the University.

J. R. BENTON, B.S., Ph.D.,
Dean of the College of Engineering,
Professor of Physics and Electrical Engineering.

MAJOR E. S. WALKER, U.S.A., Retired,
Professor of Military Science and Assistant Professor of Engineering.

A. J. WIECHARDT, M.E., M.M.E.,
Professor of Mechanical Engineering.

R. W. THOROUGHGOOD, C.E.,
Professor of Civil Engineering.

JAMES M. FARR, A.M., Ph.D.,
Professor of English.

EDWARD R. FLINT, B.S., Ph.D., M.D.,
Professor of Chemistry.

C. L. CROW, M.A., Ph.D.,
Professor of Modern Languages.

H. G. KEPPEL, A.B., Ph.D.,
Professor of Mathematics and Astronomy.

W. S. PERRY, A.B.,
Instructor in Physics and Electrical Engineering.

A. J. STRONG,
Instructor in Mechanical Engineering.

R. R. SELLERS, B.Sc.C.E.,
Instructor in Civil Engineering.

SPECIAL LECTURERS FOR 1913-1914.

F. S. PERHAM,
Contracting Engineer, Jacksonville.

ELBERT FOWLER,
Consulting Engineer, Jacksonville.

A. S. MILLER,
County Engineer, Lake City.

GENERAL STATEMENT

Aim and Scope.—It is the aim of the College of Engineering to furnish such training as will be useful to its graduates in the profession of engineering. The courses of instruction are similar to those offered in other American engineering schools of college grade; and the graduates are prepared to fill successfully such positions as are usually allotted to young engineers.

Scholastic training alone cannot make a competent engineer, any more than it can make a competent physician or lawyer. It can, however, fit a man to enter the profession of engineering; and it is an important element in ultimate success in that profession.

The work of the College of Engineering is divided among courses of study of the following types: (1) courses in the sciences fundamental to the practice of engineering, of which mathematics, chemistry, and physics are the most important; (2) courses in various branches of engineering practice in which those sciences are applied, such as structural engineering, steam and gas engineering, or electrical engineering; (3) courses in practical work, such as mechanic arts, drafting or surveying; and (4) courses contributing primarily to general culture, such as those in English and in Spanish.

Admission.—To gain admission to the Freshman class of the College of Engineering, a candidate must be prepared to offer 16 entrance units, of which 10 are prescribed. Of these 10 units, 3 must be in English, 4 in Mathematics, 1 or 2 in History, 2 or 1 in Science. The remaining 6 must be chosen from among the list of studies given on page 41, but not more than 4 can be from vocational subjects. These requirements are equivalent to the completion of the twelfth grade of the senior high schools, and are fully explained on pages 39 to 46.

Expenses.—See page 34.

Buildings and Equipment.—The principal building and headquarters of the College of Engineering is Engineering Hall. It is a three-story brick building, 122 feet by 73 feet, with a one-story wing for boilers and steam engine laboratory. It provides classrooms and drafting-rooms for all of the engineering departments of instruction, and various special laboratories, such as the hydraulic laboratory, dynamo laboratory, steam engine laboratory, and laboratory for testing materials.

For the shop work, a separate building is used. It is more fully described on page 19.

A part of the work of the College of Engineering coincides with that of the other colleges of the University, and for all such work the same classrooms and laboratories are utilized.

Suitable equipment is available for the courses requiring laboratory work, shop work or field work in surveying, and is described more fully under the departments of instruction pages 110 to 117.

Curricula and Degrees.—Three curricula, each requiring four years, are offered: one in Civil Engineering, one in Electrical Engineering, and one in Mechanical Engineering. They lead to the degrees of Bachelor of Science in Civil Engineering (B. S. C. E.), Bachelor of Science in Electrical Engineering (B. S. E. E.), and Bachelor of Science in Mechanical Engineering (B. S. M. E.), respectively.

The Freshman year is the same for all engineering students; the Sophomore year is the same for electrical and mechanical engineering students. The work in chemistry, English, Spanish, mathematics and physics is the same for all engineering students throughout the curriculum, and in part coincides with that provided for students in the College of Arts and Sciences. All engineering students take some work in drafting, shop practice, and surveying; but the time devoted to these subjects varies in the different curricula.

Requirements for Degrees for Students Admitted Before Session 1913-14.—The regulations printed below went into effect with the school year of 1913-14. Students previously admitted to the College of Engineering will be held to the requirements for degrees in force when they entered.

ENGINEERING CURRICULUM

Freshman Year

For All Engineering Students

Names of Courses	Nature of Work	*Hours Per Week	
Descriptive Geometry		2	2
Descriptive Geometry Problems		1	1
English I	Composition and Rhetoric	3	3
Mathematics I	Higher Algebra, Analytic Geometry	3	3
Mathematics II	Spherical Trigonometry, Calculus	1	1
Mechanical Drawing	Drawing and Lettering	2	2
Military Science I	Infantry Drill Regulations, Small Arms Firing Regulations	1	1
Physics I	Mechanics, Heat, Acoustics, Optics	3	3
Physics II	Laboratory Work to accompany Physics I	2	2
Wood Working	Carpentry, Wood Turning, Wood Carving, Furniture Construction	3	3
		21	21

CIVIL ENGINEERING CURRICULUM

Leading to the degree of Bachelor of Science in Civil Engineering

Sophomore Year

Names of Courses	Nature of Work	*Hours Per Week	
Chemistry I	Inorganic Chemistry	3	3
Chemistry II	General Laboratory Chemistry	2	2
Mathematics III	Differential and Integral Calculus	3	3
Military Science II	Field Service Regulations, Manual of Guard Duty	1	1
Physics III	Electricity and Magnetism	3	3
Railroads I	Curves and Earthwork	0	3
Spanish I	Elementary Spanish	3	3
Surveying I	Elementary Surveying	6	0
Surveying II	Topographic and Hydrographic Surveying	0	3
		21	21

*The first column gives the hours per week for the first semester, the second column those for the second semester. In counting hours, each actual hour of laboratory, drafting, shop, or field work is counted as one-half hour.

Junior Year

Names of Courses	Nature of Work	*Hours Per Week	
Electrical Engineering I*a*	Elementary General Course	3	0
Graphic Statics I	Elementary Graphics; Roofs	0	2½
Hydraulics I	Elements of Hydraulics	0	3
Machine Drawing		1½	1½
Mathematics IV	Solid Analytic Geometry and Calculus	2	2
Mechanics I	Analytic Mechanics	4	0
Mechanism	Kinematics of Machinery	2	2
Municipal Engineering I	Roads and Pavements	2	0
Railroads II	Preliminary and Final Location	3	0
Spanish II		3	3
Strength of Materials		0	4
Surveying III	Higher Surveying	0	2½
		20½	20½

Senior Year

Contracts and Specifications		1	1
English VIII	Technical Essays	1	1
Graphic Statics II	Girders and Bridges	2½	0
Hydraulics II	Applications of Hydraulics	3	0
Mechanics II	Analytic Mechanics	4	0
Municipal Engineering II	Water Supply	0	5
Municipal Engineering III	Disposal of Wastes; Concrete, Plain and Reinforced	3	0
Structural Engineering	Theory and Design of Bridges and Buildings	4½	4½
Bacteriology or Geology	General Elementary Course	0	5
Elective		0	3
		19	19½

*The first column gives the hours per week for the first semester, the second column those for the second semester. In counting hours, each actual hour of laboratory, drafting, shop, or field work is counted as one-half hour.

ELECTRICAL ENGINEERING CURRICULUM

Leading to the degree of Bachelor of Science in Electrical Engineering

Sophomore Year

Names of Courses	Nature of Work	*Hours Per Week	
Chemistry I	Inorganic Chemistry	3	3
Chemistry II	General Laboratory Chemistry	2	2
Forge and Foundry Work		1½	1½
Machine Drawing		1½	1½
Mathematics III	Differential and Integral Calculus	3	3
Mechanical Technology	Lectures on Forge and Foundry Practice	½	½
Mechanism	Kinematics of Machinery	2	2
Military Science II	Field Service Regulations, Manual of Guard Duty	1	1
Physics III	Electricity and Magnetism	3	3
Spanish I	Elementary Spanish	3	3
		20½	20½

Junior Year

Electrical Engineering I*a*	Elementary General Course	3	0
Electrical Engineering I*b*	Direct Current Machinery	0	3
Elementary Machine Design		3	3
Heat Engines		3	0
Hydraulics I	Elements of Hydraulics	0	3
Machine Shop I		0	3
Mathematics IV	Solid Analytic Geometry and Calculus	2	2
Mechanics I	Analytic Mechanics	4	0
Pattern Making		3	0
Spanish II		3	3
Strength of Materials		0	4
		21	21

Senior Year

Contracts and Specifications		1	1
Electrical Engineering II	Alternating Currents; Transmission; Electric Lighting	7	7
Electrical Engineering III	Telegraph and Telephone	2	2
English VIII	Technical Essays	1	1
Graphic Statics I	Elementary Graphics; Roofs	0	2½
Graphic Statics of Machinery		2	0
Heat Engines		0	3
Mechanics II	Analytic Mechanics	4	0
Elective		3	3
		20	19½

*The first column gives the hours per week for the first semester, the second column those for the second semester. In counting hours, each actual hour of laboratory, drafting, shop, or field work is counted as one-half hour.

MECHANICAL ENGINEERING CURRICULUM

Leading to the degree of Bachelor of Science in Mechanical Engineering

Sophomore Year

Names of Courses	Nature of Work	*Hours Per Week	
Chemistry I	Inorganic Chemistry	3	3
Chemistry II	General Laboratory Chemistry	2	2
Forge and Foundry Work		1½	1½
Machine Drawing		1½	1½
Mathematics III	Differential and Integral Calculus	3	3
Mechanical Technology	Lectures on Forge and Foundry Practice	½	½
Mechanism	Kinematics of Machinery	2	2
Military Science II	Field Service Regulations, Manual of Guard Duty	1	1
Physics III	Electricity and Magnetism	3	3
Spanish I	Elementary Spanish	3	3
		20½	20½

Junior Year

Electrical Engineering Ia	Elementary Course	3	0
Elementary Machine Design		3	3
Heat Engines		3	3
Hydraulics I	Elements of Hydraulics	0	3
Machine Shop I		0	3
Mathematics IV	Solid Analytic Geometry and Calculus	2	2
Mechanics I	Analytic Mechanics	4	0
Pattern Making		3	0
Spanish II		3	3
Strength of Materials		0	4
		21	21

Senior Year

Contracts and Specifications		1	1
English VIII	Technical Essays	1	1
Gas Engines		0	3
Graphic Statics I	Elementary Graphics; Roofs	0	2½
Graphic Statics of Machinery		2	0
Machine Design		3	3
Machine Shop II		3	3
Mechanics II	Analytic Mechanics	4	0
Valve Gears		1	0
**Electives		6	7½
		21	21

*The first column gives the hours per week for the first semester, the second column those for the second semester. In counting hours, each actual hour of laboratory, drafting, shop, or field work is counted as one half hour.

**Subject to the approval of the Professor of Mechanical Engineering.

DEPARTMENTS OF INSTRUCTION

CIVIL ENGINEERING

Professor Thoroughgood
Major Walker
Mr. Sellers

The purpose of the Department is to teach the student the theory, and the application of the principles underlying Civil Engineering; and thus to fit him for immediate and profitable usefulness in the field and office work of his profession.

Instruction is given by means of assigned recitations from standard text-books, combined with laboratory, field, and drawing-room exercises, for the purpose of emphasizing the practical side of the subject.

For the field work in Surveying and Railroads, the Department is amply supplied with the necessary equipment, consisting of levels, transits, plane tables, rods, tapes, etc.

In the Library will be found files, as well as the current issues, of all the leading Civil Engineering and allied technical periodicals. The reference library in Civil Engineering has been greatly enlarged recently by the purchase of books from a fund set aside for that purpose. It now contains works of reference in every branch of the subject.

SURVEYING I.—Recitations on the use of the chain, compass and level, the determination of areas, and instrumental adjustments. Field work in chaining, leveling, compass and transit surveys, and adjustments of instruments. Drawing-room work in the plotting of field notes, lettering, and map drawing. (*Recitations,* 3 *hours a week: field and drawing-room work,* 2 *periods a week, of* 3 *hours each. Prerequisite: Mathematics* II.)

SURVEYING II.—Recitations on the use of the stadia, plane table, sextant, and tape in base line work. Field problems in the use of the stadia, plane table, and sextant; a complete stadia traverse. Plotting of stadia notes. (*Recitations,* 1 *hour a week; field and drawing-room work,* 1 *period a week of* 4 *hours. Prerequisite: Surveying* I.)

SURVEYING III.—Recitations and field work. Precision leveling, city and hydrographic surveying: determinations of merid-

ian, latitude, and time. (*Recitations,* 1 *hour a week; field work,* 1 *period a week of* 3 *hours. Prerequisite: Surveying* II.)

RAILROADS I.—Recitations on the simple, compound, reversed, vertical and transition curve, and earthworks. Field problems in curve layout. Drafting room work in the paper location of a railroad. (*Recitations,* 2 *hours a week*; *field and drawing-room,* 1 *period a week, of two hours. Prerequisite: Surveying* I.)

RAILROADS II.—Field and drawing-room work in the preliminary and final location of a railroad. Estimates of earthwork and cost; plotting of profiles. (*Field and drawing-room,* 2 *periods a week, of* 3 *hours each. Prerequisite: Railroads* I.)

GRAPHIC STATICS I.—Recitations and drawing-room exercises in the computations of forces, and the plotting of diagrams in elementary graphics, and roofs. (*Recitations,* 1 *hour a week; drafting,* 1 *period a week of* 3 *hours. Prerequisites: Mathematics* I *and* II.)

GRAPHIC STATICS II.—Recitations and drawing-room work in the graphic analysis of girders and bridges. (*Recitations,* 1 *hour a week; drafting,* 1 *period a week of* 3 *hours. Prerequisite: Graphic Statics* I.)

HYDRAULICS I.—A short general course on the principles of hydraulics with special reference to their application in engineering. The subjects considered are: Stability of dams, strength of pipes and tanks, stability of ships, flow in pipes and in open channels, impulse and resistance of fluids, measurement of pressure, velocity and discharge. (*Lectures,* 2 *hours a week; laboratory,* 1 *period a week of* 2 *hours. Prerequisites: Physics* I *and* II*; Mathematics* III.)

HYDRAULICS II.—The application of the principles of Hydraulics I to the solution of such engineering problems as the improvement of rivers and harbors, construction of canals, disposal of flood waters, water power development, and drainage and irrigation. (*Lectures* 2 *hours a week; laboratory,* 1 *period a week of* 2 *hours. Prerequisite: Hydraulics* I.)

MUNICIPAL ENGINEERING I.—Recitations on the theory, design and maintenance of roads, streets, and pavements. (*Recitations,* 2 *hours a week. Prerequisite: Railroads* II.)

MUNICIPAL ENGINEERING II.—Recitations and laboratory exercises on the theory and design of a water supply system. Drawing-room computations and plotting for an actual system. (*Reci-*

tations, 3 hours a week; drawing-room, 1 period a week of 2 hours. Prerequisite: Hydraulics I.)

MUNICIPAL ENGINEERING III.—Sewerage and sewerage disposal engineering. Design of sewerage systems. Drafting room work in the design of a system. Theory of concrete and reinforced concrete. (*Recitations, 4 hours a week; drawing-room, 2 periods a week of 2 hours each. Prerequisite: Municipal Engineering* II.)

CONTRACTS AND SPECIFICATIONS.—A study of the contract in its relation to the engineer. Specifications. (*Recitations, 1 hour a week.*)

STRUCTURAL ENGINEERING.—Theory and computations of stresses in the various types of bridges and buildings. Theory and design of highway and railroad bridges. Theory of cantilever and continuous bridges. Drawing-room designs. (*Recitations, 3 hours a week; designing and drawing, 1 period a week of 3 hours. Prerequisite: Mechanics* I.)

ELECTRICAL ENGINEERING

Professor Benton
Mr. Perry

Instruction in this department is planned so as to lay equal stress on classroom work, of theoretical nature, and on laboratory work, of practical nature. For the latter, a well-equipped dynamo laboratory is provided, which is fully described on page 23.

The following courses are given:

ELECTRICAL ENGINEERING I*a*.—A short elementary course in general Electrical Engineering. Text-book to be used in 1914-1915: Norris's Introduction to the Study of Electrical Engineering. (*One semester only; 2 recitations and 1 laboratory exercise of 2 hours per week.*)

ELECTRICAL ENGINEERING II.—Dynamo-electric machinery, alternating currents, electrical transmission of power, and electric lighting. Text-books to be used in 1914-15: Franklin and Esty's Elements of Electrical Engineering; Franklin and Esty's Dynamo Laboratory Manual. (*Required of Seniors in the Electrical Engineering course; 4 recitations and 3 laboratory exercises of 2 hours each per week.*)

ELECTRICAL ENGINEERING III.—Telegraph and telephone engineering. (*Required of Seniors in the Electrical Engineering*

course; 1 recitation and 1 laboratory exercise of 2 hours per week.)

ELECTRICAL ENGINEERING IV.—A brief laboratory course on electrical machinery. (*1 laboratory exercise of 2 hours per week.*)

MECHANICAL ENGINEERING, DRAWING, AND MECHANIC ARTS

Professor Wiechardt
Mr. Strong

The instruction in this department follows theoretical and practical lines. In the drafting-room and various shops, the best practical methods are always kept in mind. System, accuracy and neatness are insisted upon everywhere. Engineering magazines and catalogues of the best machinery are accessible to the students, who are encouraged to read them. While acquainting the student with practical methods, the aim is to produce engineers of independent thought and original power. In every possible way the student is encouraged to think for himself—to make improvements where improvements are possible, and thus to keep abreast with the progress of the times.

MECHANICAL ENGINEERING

MECHANISM.—*The Kinematics of Machinery.*—This includes an investigation of link work, construction of gears and cams, belt and pulley drive, trains of mechanism, the velocity ratio and directional relation of the moving parts of various machines, etc. The text is supplemented by drawing exercises in the construction of gear teeth, cams, and motion diagrams. (*Required of all Electrical and Mechanical Engineering students; Sophomore year; 4 actual hours. Prerequisites: Descriptive Geometry Problems and Mechanical Drawing.*)

VALVE GEARS.—This course consists of the graphical study of the different types of steam engine valve gears by means of the Zeuner and other diagrams; valve setting, and steam distribution obtained by the usual types. (*Required of Mechanical Engineering students; Senior year; 2 actual hours. Prerequisite: Heat Engines.*)

GRAPHIC STATICS OF MACHINERY.—This course includes the graphic determination of the forces actuating machinery and the mechanical efficiency of several machines and machine parts. It

takes into account the effect of friction of pins, sliding pieces, screws, chains, ropes, and similar pieces. (*Required of Electrical and Mechanical Engineers; Senior year; first semester;* 4 *actual hours. Prerequisite: Graphic Statics* I.)

MECHANICS I*a*.—*Analytic and Applied Mechanics.*—This comprises a study of the laws of force, friction, equilibrium of fluid pressure, inertia, centrifugal force, kinetic and potential energy, etc. Problems are also assigned. illustrating the practical application of these laws to cranes, derricks, pumps, boilers, engines, dynamos and other machinery. (*Required of all Engineering students; first semester; Junior year;* 4 *hours. Prerequisite: All Sophomore Mathematics.*)

STRENGTH OF MATERIALS.—This comprises an investigation of the strength of materials used in the construction of machinery and engineering structures; an analysis of the stresses in bridges, roof trusses, and machinery; and a study of the mechanical properties of iron, steel, timber, cement, and other materials. The text is supplemented by laboratory tests on specimens of the various materials. (*Required of all Engineering students; second semester; Junior year;* 4 *hours. Prerequisite: Mechanics* I*a*.)

MECHANICS II*b*.—*Analytic and Applied Mechanics.*—A continuation of Mechanics I*a*. (*Required of all Engineering students; second semester; Senior year;* 4 *hours. Prerequisite: Mechanics* I*a*.)

HEAT ENGINES.—This includes a study of the steam engine and the laws of thermodynamics; the indicator card; and the losses involved in the conversion of one form of energy into another. (*Required of Mechanical and Electrical Engineering students; the former, Junior year; the latter, first semester of Junior and second semester of Senior year;* 3 *hours. Prerequisites: All Sophomore Mathematics, Physics, and Chemistry.*)

GAS ENGINES.—This includes a study of the modern internal combustion engine, gas producers, and the utilization in them of liquid fuels. (*Required of Mechanical Engineering students; second semester; Senior year;* 3 *hours weekly. Prerequisite: Heat Engines.*)

DESCRIPTIVE GEOMETRY.—*Projections.*—This includes methods of representing points, lines, surfaces and solids in space by their projections; their intersections with each other and the careful solution of many original problems on the drawing board. (*Required of all Engineering students; Freshman year;* 2 *hours.*)

DESCRIPTIVE GEOMETRY PROBLEMS.—*A companion course to Descriptive Geometry.*—It includes free-hand drawings, and a further drill in making neat, accurate drawings, mechanically. The latter deals exclusively with the solution of numerous problems of the intersection of lines, planes and solids, and is taught with especial reference to developing originality in thinking and reasoning. (*Required of all Engineering students; Freshman year; 2 actual hours. Prerequisite: Descriptive Geometry.*)

MECHANICAL DRAWING.—This comprises the use of the ordinary drawing instruments, the solution of geometrical problems, perspective drawing, isometric drawing, lettering, and some mechanical drawing from machine parts. (*Required of all Engineering students; Freshman year; 4 actual hours.*)

MACHINE DRAWING.—*Interpreting and Reading Drawings.*—The student is required to make true working drawings, showing all the necessary dimensions and the delineation of the parts to a proper scale. He is given a set of detailed drawings from which to make an assembly drawing, or vice versa. A number of tracings and blueprints are also required. (*Required of Electrical and Mechanical Engineering students in Sophomore year, of Civil Engineering students in Junior year; 3 actual hours.*)

ELEMENTARY MACHINE DESIGN.—This includes the design and proportioning of such machine parts as bolts, riveted joints, keys and gibs, toothed gearing, belt transmissions, shafts, journals, bearings and rod joints. (*Required of Mechanical and Electrical Engineering students; Junior year; 6 actual hours. Prerequisites: Machine Drawing and Mechanism.*)

MACHINE DESIGN.—This comprises the design of machines or parts of machines to perform certain functions. From a set of specifications and a manufacturer's catalogue, plans must be drawn up for the installation of machines. A certain amount of structural drawing, relative to power plant installations, is also taken up: (*Required of Mechanical Engineering students: Senior year; 6 actual hours. Prerequisite: Elementary Machine Design.*)

MECHANIC ARTS

WOOD WORKING.—*Carpentry and Wood Turning.*—First is given an elementary course in laying out work, and in the use of the ordinary hand tools, such as saws, chisels and planes. The

student is next taught the use of the turning lathe, turning by himself a series of patterns; then he is taught the care and use of wood-working machinery, such as the rip-saw, cut-off saw, band-saw, and planer. (*Required of all Engineering students; first semester; Freshman year; 6 actual hours.*)

CABINET WORK.—*Elementary Wood Carving and Furniture Construction.*—Herein is applied the skill, knowledge, and experience obtained in the first semester's work, and each student will be required to design and construct a piece of furniture, or other approved article involving carving, turning or joinery as a passing piece. (*Required of all Engineering students; second semester; Freshman year; 6 actual hours. Prerequisite: Wood Working.*)

FORGE I*a*.—Practice work is first given so as to develop proficiency in the use of the hammer. The student then makes articles of intrinsic value, such as foundry tools, hammers, cold chisels, lathe tools, turning chisels, drawknives, and screw-drivers. He acquires skill in forging, welding, dressing, tempering and annealing. (*Required of Electrical and Mechanical Engineering students; first semester; Sophomore year; 6 actual hours. Prerequisite: Cabinet Work.*)

FOUNDRY I*b*.—Foundry practice will be given; text-book or lectures. (*Required of Electrical and Mechanical Engineering students; second semester; Sophomore year; 3 actual hours. Prerequisite: Forge Ia.*)

PATTERNMAKING.—This course includes instruction in glueing up work, finishing smoothly with the necessary draft, allowing for shrinkage, and similar details of the patternmaker's craft. It is taught by the student making small patterns and core boxes from a system of carefully arranged and progressive exercises. These will be followed by the construction of patterns for such small machines as are designed in the drafting room for construction in the shops, at least as far as the development of the work will permit. (*Required of Mechanical and Electrical Engineering students; first semester; Junior year; 6 actual hours. Prerequisites: Cabinet Work, Machine Drawing, and Foundry Ib.*)

MACHINE SHOP I*b*.—The student is thoroughly drilled in the practical. Simple tasks in turning, boring, grinding, planing, and milling are first given, followed by the more difficult duties. (*Re-*

quired of Mechanical and Electrical Engineering students; second semester; Junior year; 6 actual hours. Prerequisite: Pattern-making.)

MACHINE SHOP II.—This is a continuation of the shop work of the previous year. It consists of the more intricate and difficult tasks. All of this work is on actual machinery or parts thereof, and is of intrinsic value. (*Required of Mechanical Engineering students; Senior year; 6 actual hours. Prerequisite: Machine Shop Ib.*)

MECHANICAL TECHNOLOGY.—A course of Lectures in Mechanical Technology, to accompany Forge I*a* and Foundry I*b*. (*Required of Electrical and Mechanical Engineering students; Sophomore year; 1 hour.*)

OTHER DEPARTMENTS

In order to avoid repetition, detailed descriptions of the required and elective subjects in other departments of the College of Engineering are not printed here. The number of the page on which any desired course appears will be found in the Index at the end of the catalogue.

SHORT COURSE IN MECHANIC ARTS

A. J. Wiechardt, M. E., M. M. E., Director

This course is designed for students who desire to attain proficiency in drafting, machine design, and shop practice, without pursuing a regular course in engineering. It does not lead to any degree. The studies shown in the following table are required:

First Year			
NAMES OF COURSES	NATURE OF WORK	*HOURS PER WEEK	
Mechanical Drawing		2	2
Machine Drawing		3	3
English I	Composition and Rhetoric	3	3
Mathematics A and B	Solid Geometry, Plane and Spherical Trigonometry	4	4
Military Science I	Infantry Drill Regulations, Small Arms Firing Regulations	1	1
Mechanic Arts	16 actual hours	8	8
		21	21

Second Year			
Chemistry I	Inorganic Chemistry	3	3
Elementary Machine Design		2	2
Mechanism	Machine Design	3	3
Mathematics I	Higher Algebra, Analytic Geometry	3	3
Military Science II	Field Service Regulations, Manual of Guard Duty	1	1
Physics I	Mechanics, Heat, Acoustics, Optics	3	3
Physics II	Laboratory Work to Accompany Physics I	2	2
Mechanic Arts	12 actual hours	6	6
		23	23

*In counting hours, each actual hour of laboratory, shop, or field work is counted as one half hour. First column, number of hours in first semester; second column, number in second semester.

COLLEGE OF LAW

FACULTY

ALBERT A. MURPHREE, A.M., LL.D.,
President of the University.

THOS. W. HUGHES, LL.M.,
Dean and Professor of Law.

HARRY R. TRUSLER, A.M., LL.B.,
Professor of Law.

CLIFFORD W. CRANDALL, B.S., LL.B.,
Professor of Law.

SPECIAL LECTURERS FOR 1913-14

CHIEF JUSTICE THOS. M. SHACKLEFORD, LL.D.,
JUSTICE JAMES B. WHITFIELD,
JUSTICE R. F. TAYLOR,
JUSTICE W. A. HOCKER,
JUSTICE R. S. COCKRELL,
All of the Supreme Court of Florida.

HON. W. B. SHEPPARD,
U. S. Dist. Judge.

HON. J. T. WILLS,
Circuit Court Judge.

HON. FRED C. CUBBERLY,
Ex-U. S. District Attorney.

HON. THOS. W. FIELDING,
Referee in Bankruptcy.

HON. ROBT. E. DAVIS,
City Attorney, Gainesville.

PROF. HARVEY W. COX, Ph.D.,
University of Florida.

GENERAL STATEMENT

In 1891, the American Bar Association declared that in its opinion it was a part of the highest duty and interest of every civilized State to make provision, when necessary, for maintaining schools of law and for the thorough legal education of all who are licensed to practice law. Feeling with its full force the soundness of this doctrine and desiring to discharge this duty on the part of the State, the State Board of Education and the Board of Control provided for the opening of the College of Law in the University of Florida in September, 1909. The advantages to accrue to the State from having, as a part of its educational system, a thorough and systematic course of instruction in the common law, with special consideration of the peculiarities and exceptions applicable in Florida, are many and evident.

It was the purpose of the Board of Control to establish a law school which, by the quality of its work and the character of its equipment, would merit and command the confidence and support of the bench and bar of the State and would draw within its walls the young men who will constitute the future bar of Florida. That the hopes of accomplishing these results were well founded and that gratifying progress towards these ends has been made, are shown by the number and character of those who have availed themselves of the advantages offered by the College of Law.

Building.—For a description of the home of the College, see page 20.

Requirements for Admission.—Graduates and matriculates of colleges and universities and applicants who have completed a high school course of four years will, upon presentation of proper credentials to that effect, be admitted to the College, without examination as to preliminary education, as candidates for a degree. Other applicants for admission as regular students will be required to stand an entrance examination. For the prescribed and elective subjects that this examination will cover, see pages 39 to 46. *No applicant under nineteen years of age will be admitted.*

Special Students.—Persons over twenty-one years of age who are not able to qualify as regular students may be admitted as "Special Students" upon presenting satisfactory evidence that they have received such training as will enable them to make profitable use of the opportunities offered in the College of Law. If the entrance conditions are removed not later than the open-

ing of the first semester of the Senior year, such students may, by special vote of the Faculty, become regular students and candidates for a degree.

ADVANCED STANDING.—Attorneys at law who have been admitted to practice in the courts of this State and who comply with the above entrance requirements will be admitted to the Senior class without examination.

No work in law done in other institutions will be accepted towards a degree, unless the applicant passes satisfactorily the examinations held in the subjects in the Junior year of this College, or unless, by special vote of the Faculty, credit is given towards Senior standing without examination for such work. In no case will credit be given for work not done in residence at an approved law school.

EXAMINATIONS.—The last week of each semester is devoted to examinations covering the work of the semester. These examinations are in writing and are rigid and searching, but ARE NOT NECESSARILY FINAL. To be considered, prima facie, to have satisfactorily completed a subject, the student must obtain a grade of at least 75 per cent. During the last week of the second year any candidate for a degree may be required to pass an examination in any or all subjects given in the course and attain a minimum average grade of 75 per cent in all subjects in order to be recommended for a degree.

THE UNIVERSITY PRACTICE COURTS.—Thoroughly organized practice courts are regular features of the course of instruction in the second year. Weekly sessions of the courts are held, over which Judges of the Practice Court preside. The object of the course in the Practice Court is to give the student practical instruction in pleading and practice at law and in equity and experience in the preparation and trial of cases. The work is arranged as follows:

First.—Cases arising upon prepared statements of fact are assigned to the second year students, upon which they are to determine what proceedings to bring and how to bring them, issue, serve, and return process, prepare the pleadings and bring the case to an issue on a question of law. Each student must take part in at least one case at law and one in equity. The case is first heard on the sufficiency of the form and the structure of the pleadings, and when these are approved the issue of law is argued

and decided, the students acting as attorneys on each side drawing the order, judgment or decree they deem themselves entitled to.

Second.—In the second class of cases in the Practice Court actual controversies are arranged and assigned for trial in the Circuit Court as issues of fact. After determining what action to bring, the students assigned to the case are required to issue the proper process and prepare and file the necessary pleadings, subpoena the witnesses, select the jury, examine and cross-exine the witnesses, and argue the case to the jury. Each student is required to participate in the trial of at least one common-law, one equity, and one criminal case and must take part in carrying one of each to the Supreme Court for review.

The work of the Practice Court in Criminal Pleading and Procedure is conducted by Dean Hughes; that in Equity Pleading and Procedure by Professor Trusler; and that in Common Law Pleading and Procedure by Professor Crandall.

THE LAW LIBRARY.—Law books are the working tools of the practicing lawyer. To teach the student how to use these tools, how to use the digests, encyclopedias, and reports, is as much the work of the law school as to teach him the general principles of the law.

The College of Law was fortunate in being able to open its doors with a good working library and now has on its shelves the following books: three sets of the Florida Supreme Court Reports, with digest; the Session Laws of Florida from 1822 to 1913, except from 1828 to 1834; McClellan's Digest and Duval's Compilation of the Laws of Florida; Revised Statutes of 1892 and the General Statutes of 1906; the Northwestern, Southwestern, Northeastern, Southeastern, Atlantic, Pacific, and Southern Reporters; the American Decisions, American Reports and American State Reports, with digests; the Lawyers' Reports Annotated, with digests; the United States Supreme Court Reports, with digests; the New York Common Law and Chancery Reports, with digests; the New York Court of Appeals Reports, the Reports of the Supreme Courts of Michigan and Massachusetts and the New Jersey Equity Reports to the Reporters; the Reprint of the English Reports, the Encyclopedia of Law and Procedure and more than two hundred of the leading text-books and books of reference. The Legislature of 1911 ap-

propriated one thousand dollars for the purchase of new books, and recently this money was expended in buying the Alabama State Report, the Illinois State Reports, the New Jersey Law State Reports, the Decennial, and many text-books.

Books.—The text-books used in the College of Law will, in most cases, be found in the law library, but it will be necessary for students to provide themselves with books for their daily use. Nearly all of the books are standard texts and will form a nucleus of the student's future library.

The Marshall Debating Society.—It is important that those who study law and intend to engage in its practice should give attention to the subject of public speaking. To suppose that excellence in public speaking and debating is a gift of nature only and not the result of patient and persistent effort, is a mistake. Believing in the truth of these statements, the students in the College of Law met early the first year and organized a society that would secure to its members practice in debating and public speaking and experience in arguing legal questions, as well as drill in parliamentary law. The society was fittingly named "The Marshall Debating Society," in honor of the memory of the distinguished Southern jurist, John Marshall. The membership and work in the society are limited to students in the College of Law, but the Faculty give all possible assistance and encouragement.

University Privileges.—The advantages of the other colleges of the University are open to such students in the College of Law as desire and are able to accept them. Courses in Constitutional and Political History, International Law, Political Economy, Logic, Rhetoric and English Composition are particularly recommended to law students. No extra charge will be made for such courses, but students in the College of Law will be permitted to take them only with the consent of the Law Faculty and of the professors concerned.

Degree.—The degree of Bachelor of Laws (LL.B.) is conferred upon those students who satisfactorily complete the courses of study. Students admitted to advanced standing may, if they do satisfactorily the work prescribed, receive the degree after one year's residence, but in no case will the degree be granted unless the candidate is in actual residence during all of the second year.

Admission to the Bar.—The graduates of the College of Law are licensed by the Supreme Court, without examination, to

practice in all the Courts of Florida upon presenting their diplomas, duly issued by the proper authorities, and upon furnishing satisfactory evidence that they are twenty-one years of age and of good moral character.

EXPENSES.—See page 34.

COURSE OF INSTRUCTION

The course of instruction in the College of Law extends through two years of thirty-five weeks each, exclusive of vacations. The academic year is divided into two semesters, the first having eighteen weeks and the second seventeen.

The purpose of the College is to educate its students by the study of jurisprudence and to acquaint them with the foundation principles of the common law. "The ability to think clearly, to reason closely, to appreciate distinctions quickly, to investigate thoroughly, to generalize accurately, and to state his conclusions tersely, are prime requisites of the safe counselor." To secure for the student this power should be the constant effort of both student and Faculty.

The method of instruction has been planned with these ends in view. This is largely by the use of text-books and selected cases. Each case is carefully studied by the student, and in the classroom he is required to analyze it, giving in his own language a clear and concise statement of the essential facts, the issues involved in the case, the law governing it, and the reasoning of the court for the conclusion reached. This practice tends "to greater thoroughness in reading, greater care in reasoning, and greater accuracy on the part of the student in the art of expression."

In connection with this case work, the student studies a well written text-book on the subject under consideration. This gives him a systematic summary of the same, more detailed information concerning the application of the law in particular instances, and an outline of the exceptions to and limitations upon the general principles considered in the cases.

Particular stress is placed on the statutory modifications of the common law in Florida. This is true in every subject in the curriculum; but it is especially emphasized in Pleading, Practice and Evidence, as the course of study is designed to instruct the student thoroughly in the peculiarities of substantive law and procedure in Florida, so that he will be able to enter upon the practice understandingly at once.

With these ends in view, the following course of study has been prepared:

FIRST YEAR

FIRST SEMESTER

CONTRACTS.—The nature of contract; offer and acceptance; form and consideration; capacity of parties; reality of consent; legality of object; operation of contract. Text-books: Willis on Contracts and Huffcut and Woodruff's Cases on Contracts. (5 *hours. Dean Hughes.*)

ELEMENTARY LAW AND ELEMENTARY REAL PROPERTY.—Study of the elementary principles of the law as given in Books I, II and III of first edition of Robinson's Elementary Law and the first six chapters of Hopkins on Real Property. (4 *hours. Professor Crandall.*)

DOMESTIC RELATIONS.—This course considers thoroughly the law of husband and wife, parent and child, guardian and ward, infants, persons *non compos mentis* and aliens. Text-books: Long's Domestic Relations and the Statutes of Florida. (2 *hours. Professor Crandall.*)

TORTS.—History and definitions; elements of torts; conflicting rights; mental anguish; parties to tort actions; remedies; damages; conflict of laws; method of discharge. Text-books: Burdick on Torts and Burdick's Cases on Torts. (3 *hours. Professor Trusler.*)

CRIMINAL LAW.—Nature of crime; common-law and statutory offenses; mental element in crime; insanity, intoxication, infancy, coercion, ignorance and mistake as bearing on exemption from criminal liability; necessity; justification; agency; consent; condonation; contributory acts; principals; accessories; classification and study of specific crimes; former jeopardy; State and Federal jurisdiction. Text-books: Hughes on Criminal Law and the Statutes of Florida. (2 *hours. Dean Hughes.*)

SECOND SEMESTER

SALE OF PERSONAL PROPERTY.—Sale and contract to sell; statute of frauds; illegality; conditions and warranties; delivery; acceptance and receipt; vendor's lien; stoppage in transitu; bills of lading; remedies of seller and buyer. Text-book: Tiffany on Sales. (1 *hour. Professor Trusler.*)

TORTS.—Exhaustive study of particular torts, including among others, false imprisonment; malicious prosecution and abuse of process; conspiracy; slander and libel; trespass; conversion; deceit; nuisance; negligence Text-books: Burdick on Torts and Burdick's Cases on Torts. (2 *hours. Professor Trusler.*)

AGENCY.—Definitions and divisions; purposes for which the relation may be created and how; who may be principal or agent and evidence of the existence of the relation; ratification; delegation of authority by agent; termination, nature and extent, construction and execution of the authority; rights, duties and liabilities of agent, principal and third persons, the one to the other; particular classes of agents. Text-books: Mechem's Outlines of Agency and Mechem's Cases on Agency. (2 *hours. Dean Hughes.*)

COMMON LAW PLEADING.—Definition and classification of actions; proceedings in an action; analysis of the declaration; Stephen's Rules of Pleading. Text-book: Andrews' Stephen's Common Law Pleading, the Statutes of Florida and the Supreme and Circuit Court Rules in Common Law Actions in Florida. (3 *hours. Professor Crandall.*)

EQUITY JURISPRUDENCE I.—History and Definition; jurisdiction; general maxims; equitable estates, interests and primary rights, including a study of trusts, the powers, duties and liabilities of trustees; mortgages; equitable liens; assignments. Text-books: Eaton on Equity and Selected Cases. (2 *hours. Professor Trusler.*)

REAL PROPERTY II.—Text-books: Hopkins on Real Property and the Statutes of Florida. (2 *hours. Professor Crandall.*)

CRIMINAL PROCEDURE.—Jurisdiction and venue; arrests, searches and seizures; extradition; preliminary examination, bail and commitment; modes of accusation; the form of accusation; pleading, proof; variance; verdict and judgment; proceedings after verdict; evidence; habeas corpus. Text-books: Hughes's Criminal Procedure and the Statutes of Florida. (1 *hour. Dean Hughes.*)

BRIEF MAKING AND THE USE OF LAW BOOKS.—Where to find the law; how to use statutes and decisions; how to find the law; the trial brief; the brief on appeal and its preparation. Text-books: Brief Making and the Use of Law Books. (1 *hour. Professor Crandall.*)

SECOND YEAR

FIRST SEMESTER

EQUITY PLEADING.—Nature and object of pleadings in equity; parties to a suit in equity; proceedings in a suit in equity; bills in equity; the disclaimer; demurrers and pleas in equity; replication and answers in an equitable suit. Text-books: Shipman's Equity Pleading, Rules of the Circuit Court in Chancery in Florida, and the Statutes of Florida. (2 *hours. Professor Trusler.*)

EVIDENCE.—Rules as to admission and exclusion of evidence; judicial notice; parole evidence rule; burden of proof and the right to open and close; competency and examination of witnesses; production of documents, persons, and things; direct examination, cross examination, and redirect examination. Text-books: Hughes on Evidence, and the Statutes of Florida. (3 *hours. Dean Hughes.*)

BAILMENTS AND CARRIERS.—Nature and classification of bailments; rights and liabilities of the parties; innkeepers, carriers of goods as to liability, discrimination, compensation, lien; Carriers of passengers as to duty to accept, accommodations, ticket, ejection, personal injuries; actions against carriers. Text-book: Goddard's Outlines of Bailments and Carriers. (1 *hour. Professor Crandall.*)

NEGOTIABLE INSTRUMENTS.—Law Merchant; definitions and general doctrines; contract of the maker, acceptor, certifier; drawer; indorser, vendor, accommodater, assurer; proceedings before and after dishonor of negotiable instruments; absolute defenses; equities; payments; conflict of laws. Text-books: Bigelow on Bills, Notes and Checques, the Negotiable Instrument Act of Florida, and selected cases. (2 *hours. Professor Crandall.*)

EQUITY JURISPRUDENCE II.—Accident, mistake, and fraud; penalties and forfeitures; priorities and notice; bona fide purchasers; estoppel; election; satisfaction and performance; conversion; specific performance; injunction; reformation; cancellation; cloud on title; ancillary remedies. Text-books: Eaton on Equity and selected cases. (2 *hours. Professor Trusler.*)

ORGANIZATION OF AND PROCEEDINGS IN THE COURTS OF FLORIDA IN CIVIL ACTIONS.—

a. *In General.*—Disqualification, resignation, and removal of

judges; judge's power in vacation; judge ad litem; parties to suits at law; locality and consolidation of actions; joinder of causes of action; rule days; commencement of suits at common law; appearances, defaults and judgments upon default; pleadings at law; witnesses and evidence; jurors; judgments and executions; motions for new trial and in arrest of judgment; lis pendens; appellate proceedings at law and in probate matters; limitation of actions.

b. *Supreme Court.*—Statutory powers; members of the court; its terms, record, clerk, seal, decisions, and reports.

c. *Circuit Court.*—Statutory powers and duties of judges; terms; records and dockets to be kept by the clerk; seal and records.

d. *Circuit Court in Chancery.*—Its power in vacation; locality of action; process, its service and return; bill, demurrer, plea and answer; practice and evidence; masters in chancery; decrees; rehearings and appeals; injunctions; ne exeat; divorce and alimony; partition of property; quieting titles; disability of minors and married women; liens.

e. *Statutory Jurisdiction of Circuit Court.*—Ejectment; reestablishing lost papers; adoption of children; eminent domain; court commissioners.

f. *County Court.*—Jurisdiction; terms; clerk; seal; records; appeals; rules of practice.

g. *County Judge's Court.*—General powers; bonds; clerk; seal; probate powers; as justice of the peace; forcible entry and detainer.

h. *Courts of Justices of the Peace.*—General provisions; jurisdiction; proceedings before, at, and after trial; proceedings on appeal.

i. *Special Statutory Proceedings at Law.*—Attachment; garnishment; forcible entry and detainer; replevin; statutory liens; landlord and tenant.

j. *Extraordinary Legal Remedies.*—Habeas corpus; quo warranto; prohibition.

Text-books: Shipman's Common Law and Equity Pleading, General Statutes of Florida, decisions of Florida Supreme Court and the Common Law and Equity Rules of Practice of the Circuit and Supreme Courts of Florida. (*2 hours a week throughout the year. Professor Crandall.*)

THE UNIVERSITY PRACTICE COURT.—(*One hour a week throughout the year. Dean Hughes, Professor Trusler, and Professor Crandall.*)

FLORIDA CONSTITUTIONAL LAW.—Declaration of rights; legislative, executive, and judicial departments of government; suffrage and eligibility; census and apportionment; counties and cities; taxation and finance: homestead and exemptions; married women's property; education; public institutions; miscellaneous provisions. Text-books: The Constitution, Statutes and Judicial Decisions of Florida. (1 *hour. Professor Trusler.*)

UNITED STATES CONSTITUTIONAL LAW.—General principles; distribution of governmental powers; congress; the chief executive; the judiciary; police powers; eminent domain; checks and balances; guarantee of republican government, civil rights; political privileges; guarantees in criminal cases; impairment of contractual obligations; municipal corporations. Text-books: Cooley's Principles of Constitutional Law and Cooley's Constitutional Limitations. (2 *hours. Professor Trusler.*)

BROOM'S LEGAL MAXIMS.—A reading course running throughout the year. (*Dean Hughes.*)

SECOND SEMESTER

JURISDICTION OF THE UNITED STATES COURT.—Under the federal constitution; jurisdiction of the different federal courts; ancillary and appellate jurisdiction; bankruptcy; admiralty suits; federal questions; removal from state to federal courts, habeas corpus. Text-books: Hopkin's Judicial Code and selected cases. (1 *hour. Professor Trusler.*)

WILLS.—Definition, nature and kinds of wills; a devisable estate; who may make a will; error, fraud, undue influence, mistake; who may take by will; formal requisites of wills; revocation; re-publication; by what law wills are governed; construction and effect of wills; lapse and substitution; rights and liabilities of devisees and legatees; descent and distribution. Text-books: Rood on Wills and the Statutes of Florida. (2 *hours. Professor Crandall.*)

LEGAL ETHICS.—A consideration of the profession of the law in its relation to society, embracing the duties the lawyer owes to the commonwealth, to the court, to his professional brethren, and to his clients. Text-books: Warvelle's Legal Ethics and the

Code of Ethics adopted by the American Bar Association. (1 *hour. Dean Hughes.*)

EXECUTORS AND ADMINISTRATORS.—When necessary; appointment and qualification; acceptance or renunciation; foreign and interstate administration; powers, duties, and liabilities of executors and administrators; inventory; assets of estate; insolvent estates; distribution; accounting and allowances. Text-books: Croswell's Executors and Administrators and the Statutes of Florida. (2 *hours. Professor Trusler.*)

DAMAGES.—General principles; nominal, compensatory, exemplary, and liquidated damages; interest; value; pleading and practice; breach of contracts for sale of goods; actions against carriers; death by wrongful act; wrongs affecting real property; damages in tort action; breach of marriage promise. Text-book: Cases on Damages, selected from Florida Reports. (1 *hour. Professor Trusler.*)

PARTNERSHIP.—Definitions and classifications; what constitutes a partnership; contract of partnership; firm name and good will; capital of firm; partnership property; rights and liabilities of partners among themselves and as to third persons; actions; dissolutions; limited partnerships. Text-book: Shumaker on Partnership, and selected cases. (1 *hour, Dean Hughes.*)

PRIVATE CORPORATIONS.—Nature of a corporation; creation and citizenship of corporations; defectively organized corporations; promoters and corporations; powers and liabilities of corporations; corporation and the State; dissolution of corporations; membership in corporations; management of corporations; creditors, their rights and remedies; foreign corporations. Text-books: Elliott on Corporations and the Statutes of Florida. (3 *hours. Dean Hughes.*)

TEACHERS COLLEGE AND NORMAL SCHOOL

FACULTY

ALBERT A. MURPHREE, A.M., LL.D.,
President.

JOHN A. THACKSTON, Pd.M., Ph.D.,
Dean, Professor of Education, and High School Inspector.

HARVEY W. COX, A.M., Ph.D.,
Professor of Philosophy.

L. W. BUCHHOLZ, A.M.,
Professor of Elementary Education, Methods and Supervision.

JAS. M. FARR, A.M., Ph.D.,
Professor of English Language and Literature.

EDWARD R. FLINT, Ph.D., M.D.,
Professor of Chemistry.

J. R. BENTON, A.B., Ph.D.,
Professor of Physics.

C. L. CROW, M.A., Ph.D.,
Professor of Modern Languages.

JAS. N. ANDERSON, M.A., Ph.D.,
Professor of Ancient Languages.

H. S. DAVIS, Ph.D.,
Professor of Zoology and Bacteriology.

J. J. VERNON, B.Agr., M.S.A.,
Professor of Agriculture.

H. G. KEPPEL, A.B., Ph.D.,
Professor of Mathematics.

A. J. WIECHARDT, M.E., M.M.E.,
Professor of Mechanical Engineering and Drawing.

W. L. FLOYD, M.S.,
Professor of Horticulture.

LUTHER LEE BERNARD, A.B., Ph.D.,
Professor of History and Economics.

C. L. WILLOUGHBY, B.Agr.,
Professor of Animal Husbandry and Dairying.

W. S. CAWTHON, A.B.,
Assistant Professor of Mathematics and Science.

W. B. HATHAWAY, A.B., B.D.,
Instructor in Latin, History and English.

W. S. PERRY, A.B.,
Instructor in Physics.

A. J. STRONG,
Instructor in Mechanic Arts.

IRA D. ODLE, B.S.,
Instructor in Botany and Bacteriology.

R. S. BLANTON, A.B.,
Teaching Fellow in Mathematics.

H. S. SAWYER, A.B.,
Teaching Fellow in History.

GENERAL STATEMENT

The Teachers College and Normal School is essentially a professional school. Its main purpose is to train young men for positions in the public school system of the State as teachers, principals, supervisors, or as county and city superintendents of public instruction. Its Review Courses are intended to prepare teachers for the examinations for County and State Certificates. For those not wishing to become teachers it offers courses giving the information about and the insight into modern educational problems that every intelligent citizen should possess.

PEABODY HALL.—Peabody Hall, the home of the College, is a magnificent building, modern in every respect both as to equipment and as to arrangement. A description of it will be found on page 20.

LIBRARY.—The pedagogical library receives many of the best educational journals, and contains the standard books on educational theory, general and special methods, the history of education, psychology, and philosophy. Additions to these are made every year.

PSYCHOLOGICAL LABORATORY.—The Psychological Laboratory (see page 24) affords an excellent opportunity to investigate the laws of the mind. To know these through experiment will give the teacher greater power to direct properly their development in the child.

PEABODY CLUB.—Active membership in this club, a description of which is to be found on page 38, is considered of the utmost importance.

ORGANIZATION.—The Teachers College and Normal School has the following divisions:

(1) Teachers College.
(2) Normal School.
(3) Practice High School.
(4) Correspondence School for Teachers.
(5) State High School Inspection.
(6) Teachers' Employment Bureau.
(7) University Summer School.

STATE CERTIFICATES.—Graduates of the Teachers College and of the Normal School are granted State Certificates without further examination—provided, that one-fifth of their work has been devoted to professional training, and provided further, that during each of the last two years of their course they make a general average of eighty-five on all subjects and do not fall below sixty in any subject. These State Certificates are converted into Life Certificates in the usual way.

TEACHERS COLLEGE

Admission.—The requirements for admission to the Freshman class of the Teachers College are the same as those of the College of Arts and Sciences and may be found in detail on pages 39 to 46, inclusive.

Expenses.—See page 34.

Degrees.—The Teachers College offers courses leading to the degree of Bachelor of Arts in Education and Bachelor of Science in Education.

Electives.—In order that the graduates of the Teachers College may be well prepared to teach two or three high school subjects, much freedom in the choice of electives is permitted. It is taken for granted that the student will elect the subjects which he hopes to teach and will take advantage of his freedom of choice to become especially proficient in those elected. For a list of elective groups see page 52. For the A.B. degree the major elective work must be chosen in Groups II and III, or Group II or III; for the B.S. degree, from Group IV. In all years the choice of electives must be approved by the Dean and no more than the required numbers shall be chosen without his consent. The foreign language elected by Freshmen must be pursued throughout the Sophomore year.

Teaching Fellowships.—See page 34.

CURRICULUM

Leading to the Degree of Bachelor of Arts or Bachelor of Science in Education

Freshman Year

Names of Courses	Nature of Work	Hours Per Week
Education NIII	Reviews and Methods of Teaching History, Reading and Geography	4
Education I*a*	Psychology	3
Education II*b*	Methods of Study	
English I	Rhetoric and Composition	3
French I	Elementary Course	3
or		
German I	Elementary Course	
or		
Spanish I	Elementary Course	
or		
Latin		
Mathematics		6
History I	Modern European	
Botany I	General Botany	
Chemistry I	General Chemistry	
Agronomy I	General Agriculture	
Physics I	General Physics	
Foreign Language	French, German, Spanish or Latin	
Military Science I		1
		20

Sophomore Year

Education III	Reviews and Methods of Teaching Arithmetic and Grammar	3
Education IV*b*	School Management and Supervision	1½
Military Science II		1
Group II		3 or 6
Group III		3 or 6
Group IV		3 or 6
		17½

Junior Year

Education V*a*	History of Education	3
Education VI*b*	Secondary Education	
Philosophy I*a* and *b*	General Psychology	3
Electives		9
		15

Senior Year

Education VII	Principles and Philosophy of Education	3
Education VIII*a*	Child Study	3
Education IX*b*	Practice Teaching	
Education Special	High School Teachers Course	1
Electives		9
		16

DEPARTMENTS OF INSTRUCTION

EDUCATION

Professor Thackston
Professor Cox
Professor Buchholz

EDUCATION I*a*.—*Psychology*.—An elementary course designed to set forth the main phenomena of mental life, to furnish the student with the concepts and terms which will constantly recur in his further study, and to prepare candidates for the examination on Psychology for the State Certificate. The textbook prescribed from time to time by the State Superintendent of Education will be used in connection with lectures and much reference work to the standard American writers. (*Required of Freshmen; first semester;* 3 *hours.*)

EDUCATION II*b*.—*General Methods*.—This has for its main purpose the application of the laws of psychology, as learned in Education I*a*, to the general methods of study and of teaching. The student will be shown the best methods of study that psychological laws indicate and he will be urged to pattern his own habits of study accordingly. The general principles and methods of teaching will be stressed. (*Required of Freshmen; second semester;* 3 *hours.*)

EDUCATION III.—*Reviews and Methods of Teaching Arithmetic and Grammar*.—During the first semester a thorough review of Arithmetic will be made in order to acquaint the student with the fundamental principles of the subject before the methods, which imediately follow, are given. During the second semester English grammar will be treated in the same way. (*Required of Sophomores;* 3 *hours.*)

EDUCATION IV*b*.—*School Management and Supervision*.—This course is designed to give the practical and theoretical information needed by principals and county superintendents in their supervision of elementary and grammar schools. During the course many practical problems are taken up and fully discussed. Discipline, school and class hygiene, purpose of education, organization and classification, grading and promoting—special plans of promotion being discussed—programs, time tables, report cards, plan and progress books, departmental teaching, exercises and intermissions, the recitation, etc. (*Required of Sophomores; second semester;* 3 *hours.*)

EDUCATION V*a*.—*History of Education*.—This course has two main purposes: First, to lead the student to see and appreciate the good things in the many systems of education studied and to apply them as far as possible in his own work; second, to inspire him with the noble ideals manifested in the lives and works of the great educational leaders, and thus to excite in him greater devotion to his calling. (*Required of Juniors; first semester;* 3 *hours.*)

EDUCATION VI*b*.—*Secondary Education*.—This course is designed to give insight into the problems of the secondary and high school. Many problems relating to the high schools in this and other Southern States are thoroughly gone over for the purpose of understanding the present situation and planning for better things. The following special topics may be mentioned: Psychology and Pedagogy of Adolescence, High-School Athletics, History of Secondary Education, High-School Courses, comparative study of secondary education in different countries. Lectures and reference work supplement the reading of several texts. (*Required of Juniors; second semester;* 3 *hours.*)

EDUCATION VII.—*The Principles and Philosophy of Education*.—This course attempts to select from modern psychology and sociology all the facts that will aid the teacher in obtaining a clearer insight into the actual workings of the child's mind in the process of learning. A few of the topics studied are: The brain and nervous system, the place of the body in education, attention, interest, imitation, the social, moral and religious aspects of education. (*Required of Seniors;* 3 *hours.*)

EDUCATION VIII*a*.—*Child Study*.—The aim of this course is to give the student an insight into the physical development and growth of the child, the meaning of protracted infancy, the origin and development of instincts, development of intellect, heredity, individuality, abnormalities and the application of facts learned to school work, etc. (*Required of Seniors; first semester;* 3 *hours.*)

EDUCATION IX*b*.—*Practice Teaching*.—Knowledge of the principles, theory, and of the history of education will better fit any teacher for his work, but these without concrete experiences and practice under direction will not give the best results. Realizing this, the course is planned for the purpose of giving this experience under the supervision and watchcare of the professor in charge of the department in which the subject chosen for practice

is taught. This practice teaching will occupy the same position as laboratory work does in the science departments and will have the same proportion of credit. (*Required of Seniors; second semester; 3 hours.*)

SPECIAL COURSES FOR HIGH SCHOOL TEACHERS.—The following courses are offered by the different departments of the University for the special preparation of high school teachers. Each course will aim to give to the student the teachers' point of view of the subject, and will go over and organize the material that the special subject should cover in the high school course. Attention will be given to the methods of presenting the subjects to a class. The best text-books and reference books will be pointed out, as well as special books and magazines that have recently appeared on the teaching of the subject. In the sciences the student will have the privilege of handling and setting up the apparatus used in making demonstrations before a class. Besides this he will be required to select lists of the most suitable apparatus for high school laboratories. Practice teaching in the Practice High School will be given to students who take these courses. In a word, it is the aim of these courses to fit students to begin their teaching in an efficient and satisfactory manner without having to experiment for a year or two.

These courses are open only to teachers in the Junior, Senior and Graduate classes. Students are REQUIRED to take the course or courses that deal with the subject or subjects which they are preparing to teach; but none of these courses may be taken except after thorough study in the college classes of the subject or subjects in question.

EDUCATION X*a*.—*The Teaching of English.*—A general survey of high school English and the methods of presenting the subject. Text-book, reference reading, observation and practice teaching. (1 *hour; first semester. Professor Farr.*)

EDUCATION XI*b*.—*Botany in the High School.*—High School botany from the teacher's standpoint. Apparatus for laboratory will be selected, field trips planned and made, and best text-books pointed out. Text-books and reference reading. (1 *hour; second semester. Professor Floyd.*)

EDUCATION XII*a*.—*Methods of Teaching High School Mathematics.*—Text-book, lectures and practice teaching. (1 *hour; first semester. Professor Keppel.*)

EDUCATION XIII*b*.—*High School History*.—Methods and materials used in presenting history to high school pupils. Observation and practice teaching, text-books and reference reading. (1 *hour; second semester. Professor Bernard.*)

EDUCATION XIV*a*.—*Teaching of High School Physics*.—Methods, the selection of proper apparatus, etc. (1 *hour; first semester. Professor Benton.*)

EDUCATION XV*b*.—*High School Chemistry*.—Methods, the selection of proper apparatus, etc. (1 *hour; second semester. Professor Flint.*)

EDUCATION XVI*a*.—*Methods of Teaching German in the High School*.—Lectures and reference reading. (1 *hour; first semester. Professor Crow.*)

EDUCATION XVII*b*.—*Teaching French in the High School*.—Methods and devices; lectures and text-books. (1 *hour; second semester. Professor Crow.*)

EDUCATION XVIII*b*.—*Teaching High School Agriculture*.—Making out suitable courses, selecting apparatus for experimenting, methods of presenting subject. Lectures and reference reading. (1 *hour; second semester. Professor Vernon.*)

OTHER DEPARTMENTS

In order to avoid repetition, detailed description of the other subjects that may be taken by students in the Teachers College is not printed here. The number of the page on which any desired course appears is to be found in the Index at the end of this catalogue.

NORMAL SCHOOL

COURSES AND REQUIREMENTS

The Normal School offers four courses:

Course I.—Spring Review Course.—This course covers both the contents and methods of teaching the subjects required for County and State Certificates, and is designed for those engaged in teaching from four to six months in the year and desirous of renewing or advancing the grade of their certificates.

Course II.—One-Year Course.—This covers the same work as Course I, but is gone over more slowly and may be entered upon at any time during the year. Hours and classes are arranged to suit the special needs of the students.

There are no requirements for admission to either Course I or Course II, and all teachers who can profit by either are welcomed. The character of the work leading to State and Special Certificates is described under Course IV; an outline of the work leading to a County Certificate is given below. The text-books adopted by the State Superintendent of Public Instruction will be used as the basis of instruction.

CURRICULUM, SPRING REVIEW
COUNTY CERTIFICATES

Names of Courses	NATURE OF WORK	Hours Per Week
Agriculture		2
Algebra		4
Arithmetic		4
Civil Government		2
English Composition		2
English Grammar		2
Hygiene		2
Orthography		2
Pedagogy		2
Physical Geography		3
Political Geography		2
Reading		1
United States and Florida History		3

DESCRIPTION OF COURSES OF STUDY

Agriculture, S. R.—An introduction to the study of soils, plants and their common diseases, insects, farm crops, domestic animals, etc. Text-books, laboratory and field work. Methods of teaching agriculture in the rural schools stressed. (*2 hours.*)

ALGEBRA, S. R.—The fundamental operations, simple and simultaneous equations, factoring, fractions, involution and evolution, quadratic equations, progressions, ratio and proportion. This work will be closely correlated with that in arithmetic. (4 *hours.*)

ARITHMETIC, S. R.—A thorough review of arithmetic from both the teacher's and the child's point of view. Common and decimal fractions, denominate numbers, percentage, and other subjects covered by the text-book adopted by the State. Principles and methods of teaching arithmetic. (4 *hours.*)

CIVIL GOVERNMENT, S. R.—Local, town and city, county, State and national governments; and methods of teaching the subject. Practical information stressed, and general interest in government aroused. (2 *hours.*)

ENGLISH COMPOSITION, S. R.—Study of words, sentences, paragraphs, and whole compositions; narration, description, exposition, and argument; much practice in writing. Punctuation and spelling receive attention. Letter-writing. (2 *hours.*)

ENGLISH GRAMMAR, S. R.—Parts of speech; inflection; syntax, structure and analysis of sentences; principles and methods of teaching grammar. (2 *hours.*)

HYGIENE, S. R.—The body; functions and use of the organs. The importance of hygiene and sanitation, and how to keep well and physically efficient stressed. (2 *hours.*)

ORTHOGRAPHY, S. R.—The spelling of common words and best methods of teaching spelling stressed. Correct spelling in all written work demanded. (2 *hours.*)

PEDAGOGY, S. R.—School management, general and special methods of teaching, elementary principles of child nature, school hygiene and sanitation, personality of teacher, relation of school and community, and other practical pedagogical questions. (2 *hours.*)

PHYSICAL GEOGRAPHY, S. R.—Study of the main topics found in the ordinary text-book on the subject. Stress placed on the effects that physical features have on man, commerce, and society. Closely correlated with agriculture. (3 *hours.*)

POLITICAL GEOGRAPHY, S. R.—A thorough review of the geography of the United States and the world. Special attention to Florida and its relations to other States. Instruction

in the use of text-books, maps, globes, industrial products, stereoscope, post-cards and newspapers. (2 *hours.*)

Reading, S. R.—Weekly practice in reading to the end that teachers may be able to read well to their classes. Story-telling is introduced in connection with this work. Methods and principles of teaching reading. (1 *hour.*)

United States and Florida History, S. R.—A thorough review of United States and Florida history; their correlation with geography and literature; methods of teaching the subject. Special attention given to biography and the topic method of study. (3 *hours.*)

Course III.—Two-Year Elementary Professional Course.—This course includes all of the subjects taught in the elementary and rural schools. It gives special attention to methods of teaching, school management, rural problems, and such professional subjects as will make rural and grammar school teachers more efficient. Applicants who hold teachers' certificates, or who have finished the eighth grade of a grammar school, will be admitted to the first year of this course. On the completion of Course III, students will be admitted to the first year of the Regular Four-Year Normal Course.

CURRICULUM, TWO-YEAR ELEMENTARY PROFESSIONAL COURSE

First Year

Name of Course	Nature of Work	Hours Per Week
Education 2-Yr I	Reviews and Methods of Teaching Political Geography, Reading, U. S. and Florida History	4
English 2-Yr I	Grammar, Composition and Classics	4
History 2-Yr I	Ancient History	4
Mathematics 2-Yr I	Algebra	4
Science 2-Yr I	Physical Geography and Physiology	4

Second Year

Education 2-Yr II	Reviews and Methods of Teaching Arithmetic and English Language	4
Education 2-Yr III	School Management and Rural Problems	4
English 2-Yr II	Composition and Classics	4
Mathematics 2-Yr II	Algebra	4
Science 2-Yr II	Agronomy and Horticulture	3

DESCRIPTION OF COURSES OF STUDY

EDUCATION 2-YR. I.—*Reviews and Methods of Teaching U. S. and Florida History, Reading and Political Geography.*—Thorough and complete reviews of these three subjects are made. The work is broader and more advanced than that of the eighth grade, and is always looked at both from the teacher's and the pupil's points of view. History is studied in the fall, reading in the winter, and geography in the spring, the subject matter being first given and then the methods of presenting it to a class. (4 *hours.*)

EDUCATION 2-YR. II.—*Reviews and Methods of Teaching Arithmetic and English Language.*—Thorough and complete reviews of these subjects are made, and the difficult parts are taken up and fully explained. Methods of teaching are given for each subject after the reviews are completed. Both subjects are made practical and directly helpful. (4 *hours.*)

EDUCATION 2-YR. III.—*School Management and Rural Problems.*—Among the subjects to be discussed are: School organization, classification and discipline; school hygiene, recess, and play; one- and two-teacher rural schools; grading rural schools; rural boys and girls; relation of teacher to child, home, and community.

ENGLISH 2-YR. I.—*Grammar, Composition, and Classics.*—A thorough course in advanced grammar (*twice per week*). Composition, oral and written. At least one written composition every week. Special attention given to narration. Spelling and letter-writing. Classics, College Entrance Requirements and those best suited for the upper grades of the grammar school and the ninth grade of the high school. (4 *hours.*)

ENGLISH 2-YR. II.—*Composition and Classics.*—A text-book in composition used as guide (*twice per week*). Description and narration will receive the major part of the time. Oral and written composition. One written composition each week. Spelling and letter-writing. Classics (*twice per week*) suited to grade and high school work. (4 *hours.*)

HISTORY 2-YR. I.—*Ancient History.*—The major part of the time will be given to the study of the history of Greece and Rome. Special note of hero stories, biography, mythology, and that which appeals to the child in the grades. Reference reading required in connection with the topics of the text-books. (4 *hours.*)

MATHEMATICS 2-YR. I.—*Algebra.*—A beginner's course covering the work through elementary quadratics. (4 *hours.*)

MATHEMATICS 2-YR. II.—*Algebra.*—A thorough review of algebra to quadratics, then quadratics and the remaining part of an ordinary second-year algebra. (4 hours.)

SCIENCE 2-YR. I.—*Physical Geography and Physiology.*—The work in physical geography will be about as outlined in the newer secondary school geographies. The proper correlation of physical with political and commercial geographies—especially necessary for teachers. Laboratory and field work with notes on all observations and experiments. Physiology will be given one semester and will cover a practical course in physiology, sanitation and hygiene. Laboratory work with notes required. (4 *hours.*)

SCIENCE 2-YR. II.—*Agronomy and Horticulture.*—Agronomy will be a study of soils and soil fertility in their relations to plant growth and the underlying principles governing the production of field and forage crops. (*First semester*). The horticulture is a study of varieties and culture requirements of our principal fruits and vegetables; location of orchards and gardens with reference to soils, climate and markets; protection from insects and diseases; harvesting and marketing; styles of decorative planting adapted to home and school. (3 *hours.*)

Course IV.—Regular Four-Year Normal Course. —This course will offer work similar to that of the standard normal schools of this country. Applicants who have finished the first two years of a high school will be admitted to the first year of this course. High school graduates will be allowed to enter the third year. Graduates of the Normal School will be admitted to the Junior class of the Teachers College.

CURRICULUM, REGULAR FOUR-YEAR NORMAL COURSE

First Year

NAMES OF COURSES	NATURE OF WORK	HOURS PER WEEK
English NI	Rhetoric, Composition and Classics	4
History NI	Mediaeval and Modern History	4
Mathematics NI	Plane Geometry	4
Take from 6 to 8 hours of the following:		
Latin NI	Beginner's Course	4
French NI	Beginner's Course	4
Spanish NI	Beginner's Course	4
Science NI	Physics	4
Mechanic Arts NI*a* and NII*b*	Wood Work	3
Agriculture NI	Elements of Agronomy and Horticulture	3
Required		18 to 20

Second Year

Names of Courses	Nature of Work	Hours Per Week
English NII	American and English Literature and Composition	4
History NII	American History and Civics	4
Take from 11 to 12½ hours of the following:		
Latin NII	Cæsar (4 books) and Composition	4
Mathematics NII	Plane Trigonometry and Solid Geometry	4
French NII	Second Year Course	4
Spanish NII	Second Year Course	4
Agriculture NII	Elements of Animal Husbandry and Agricultural Engineering	3
Science NII	Chemistry	4
Mechanic Arts NIII*a* and NIV*b*	Forge and Foundry Work	4½
Required		19 to 20½

Third Year

Education I*a*	Psychology	3
Education II*b*	Methods of Study	
Education NIII	Reviews and Methods of Teaching History, Geography, and Reading	4
English I	Rhetoric and Composition	3
Take 9 hours of following:		
French I	Elementary Course	3
German I	Elementary Course	3
Spanish I	Elementary Course	3
Latin NIII	Cicero, Composition and Grammar	3
Mathematics	Plane Analytic Geometry and College Algebra	4
Physics I	General Physics	3
Agronomy I	General Agriculture	3
Botany I	General Botany	3
Chemistry I	General Chemistry	3
History I	Modern European	3
Military Science I		1
Required		20

Fourth Year

Education III	Reviews and Methods of Teaching Arithmetic and Grammar	3
Education IV*b*	School Management and Supervision	3
Education V*a*	History of Education	
Education IX*b*	Practice Teaching	1½
Group II		3
Group III		3
Group IV		3
Military Science II		1
Required		17½

*See Groups, p. 52.

DEPARTMENTS OF INSTRUCTION

AGRICULTURE

AGRICULTURE NI.—See Agronomy A*a* and Horticulture A*b*, College of Agriculture.

AGRICULTURE NII.—See Animal Husbandry A*a* and Agricultural Engineering A*b*, College of Agriculture.

EDUCATION

Professor Buchholz

EDUCATION NIII.—*Reviews and Methods of Teaching History, Geography and Reading.*—This course presupposes high school graduation and a good knowledge of the subjects here to be studied. A thorough mastery of the subject matter from the teacher's point of view is made, then the student is shown, and required to reproduce in class, the most psychological and pedagogical and, therefore, most practical methods and principles of teaching each subject. (*Third year; 4 hours.*)

ENGLISH

Mr. Hathaway

ENGLISH NI.—*Rhetoric, Composition and Classics.*—The formal rules of rhetoric in so far as they are needed in composition work and the study of the classics. Compositions written every week. Exposition stressed. Spelling and letter-writing. Classics two hours per week. College Entrance Requirements. (*First year; 4 hours.*)

ENGLISH NII.—*American and English Literature and Composition.*—Most of the time of this class will be devoted to the study of literature and not to the history of literature. Much reading will be required. Compositions one per week. Argumentation stressed. Spelling and letter-writing. (*Second year; 4 hours.*)

FRENCH

Assistant Professor Cawthon

FRENCH NI.—*First Year.*—Pronunciation and reading aloud, dictation and conversation, the auxiliary and regular verbs, commoner irregular verbs, simple constructions and grammar. The reading of easy selections. (*First year; 4 hours.*)

FRENCH NII.—*Second Year.*—Work of first year continued. Translations from English to French, grammar and elements of

syntax, short written exercises, dictation, conversation, reading of selections. (*Second year; 4 hours.*)

HISTORY

Professor Buchholz and Mr. Sawyer

HISTORY NI.—*Mediaeval and Modern History.*—This begins with the time of Charlemagne and comes down to the present time. Mediaeval history will be touched lightly, while stress will be placed upon English history. Text-book and reference reading required. (*First year; 4 hours.*)

HISTORY NII.—*American History and Civics.*—A general survey from the early discoveries to the present time. The work in Civics will be studied in connection with the history so far as possible. Stress will be laid upon the study of local history and geography; local industries; transportation and communication; organized community life and public health; local, State and national governments. Text-book and reference reading required. (*Second year; 4 hours.*)

LATIN

Mr. Hathaway

LATIN NI.—*Beginner's Latin.*—A good first-year book will be studied and completed. (*First, second, or third year; 4 hours.*)

LATIN NII.—*Caesar, Composition and Grammar.*—*Four* books of Cæsar will be carefully read. Prose Composition and Grammar once a week. (*Second, third, or fourth year; 4 hours.*)

LATIN NIII.—*Cicero, Composition and Grammar.*—Six orations of Cicero. Prose composition and grammar once a week. (*Third or fourth year; 4 hours.*)

LATIN NIV.—*Virgil, Composition and Grammar.*—Six books of Virgil. Prose composition and grammar once a week. (*Fourth year; 4 hours.*)

MANUAL TRAINING

Professor Wiechardt and Mr. Strong

MECHANIC ARTS NI*a*.—*Wood Work.*—Same as Carpentry and Wood Turning, College of Engineering. See page 115.

MECHANIC ARTS NII*b*.—*Elementary Wood Carving and Furniture Construction.*—Same as Cabinet Work, College of Engineering. See page 116.

MECHANIC ARTS NIII*a*.—*Forge Shop.*—Same as Forge I*a*, College of Engineering. See page 116.

MECHANIC ARTS NIV*b*.—*Foundry Practice*.—Same as Foundry I*b*, College of Engineering. See page 116.

MATHEMATICS

Assistant Professor Cawthon and Mr. Blanton

MATHEMATICS NI.—*Plane Geometry*.—The first five books in plane geometry. (*First year; 4 hours.*)

MATHEMATICS NII.—*Solid Geometry and Plane Trigonometry*.—Study of the topics ordinarily covered by standard high schools. (*Second year; 2 hours each.*)

SCIENCE

Assistant Professor Cawthon

*

SCIENCE NI.—*Physics*.—Elements of physics; problems and laboratory work. Carefully kept note-books required. (*First year; 4 hours.*)

SCIENCE NII.—*Chemistry*.—Elementary principles of chemistry; text-book and laboratory work. Carefully kept note-books required. (*Second year; 4 hours.*)

SPANISH

Mr. Hathaway

SPANISH NI.—*First Year*.—Pronunciation and reading aloud, dictation, conversation, auxiliary and regular verbs, irregular verbs, simple constructions, grammar, reading of easy selections. (*First year; 4 hours.*)

SPANISH NII.—*Second Year*.—Work of first year continued. Translations from English into Spanish, grammar, elements of syntax, short written exercises, dictation, conversation, reading of selections. (*Second year; 4 hours.*)

PRACTICE HIGH SCHOOL

The former Sub-Collegiate division of the University has been made a part of the Teachers College and Normal School and its scope has been widened so as to make it a practice and model school for the students of education. Here student-teachers will have opportunity to observe the methods of skilled instructors as well as to practice teaching under guidance the high school subjects in which they are most interested.

*To be appointed.

ADMISSION.—Only graduates of junior high schools, or pupils who have finished work equal to that of the tenth grade, will be admitted. The number admitted to either grade will, furthermore, be limited to from twenty to twenty-five. No pupil will be admitted who has not completed the course offered by the high school at his home, except upon the written application of parent or guardian, accompanied by the endorsement of his high school principal.

RESTRICTIONS.—The pupils of the Practice High School are considered boys and are not permitted to join any class, society, fraternity, athletic team, or other organization conducted for or by the college students—in other words, they are not allowed to take part in any college activity. A pupil violating this regulation will be required to withdraw immediately from the High School.

STUDIES.—The work offered is that of the eleventh and twelfth grades of the standard high schools of Florida. Not less than eighteen nor more than twenty-two hours may be taken in any one year except by special permission. English and mathematics are required the first year; English and history, the second. The remaining work—ten to twelve hours in the first year, eleven to thirteen and one-half in the second—may be chosen only after consultation with the Dean of the Teachers College. If a modern foreign language is chosen, it must be pursued during both years.

HIGH SCHOOL CURRICULUM

Third Year, or Eleventh Grade

NAMES OF COURSES	NATURE OF WORK	HOURS PER WEEK
*English	Rhetoric, Composition and Classics	4
*Mathematics	Plane Geometry	4
Take from 10 to 12 hours of the following:		
Latin	Beginner's, Cæsar, or Cicero and Composition	4
Spanish	Elementary Course	4
French	Elementary Course	4
History	Mediaeval and Modern	4
Science	Physics	4
Manual Training	Wood Work	3
Agriculture	Elements of Agronomy and Horticulture	3
Required		18 to 20

*Required of all pupils.

Fourth Year, or Twelfth Grade

Names of Courses	Nature of Work	Hours Per Week
*English	American and English Literature and Composition	4
*History	American History and Civics	4
Take from 11 to 13½ hours of the following:		
Latin	Cæsar, Cicero, or Virgil and Composition	4
Mathematics	Solid Geometry and Plane Trigonometry	4
Spanish	Intermediate Course	4
French	Intermediate Course	4
Agriculture	Elements of Animal Husbandry and Agricultural Engineering	3
Science	Chemistry	4
Manual Training	Forge and Foundry Work	1½
Required		19 to 21½

CORRESPONDENCE COURSES FOR TEACHERS

The Teachers College and Normal School has prepared correspondence courses for teachers in such subjects as School Management, General and Special Methods of Teaching the various elementary and grammar school studies, Psychology, and the History of Education. It is preparing courses in some of the regular academic subjects. Reading courses will also be suggested, for the completion of which certificates will be given.

These courses are open to all white teachers, and should appeal to those who are not able to attend school or college and yet desire to continue their studies. For further information, address Dean Jno. A. Thackston.

STATE HIGH SCHOOL INSPECTION

This division of the College was made possible through the liberality of the General Education Board of New York. (See page 15.)

The Dean of the College will visit and inspect the high schools of the State, and promote in every way possible their development. He will give what aid he can toward establishing high schools where they do not exist. Whenever requested, he will gladly discuss with school officials or private citizens any educational matter that may tend toward the welfare and improvement of the high schools of the State.

*Required of all pupils.

TEACHERS' EMPLOYMENT BUREAU

This bureau was instituted primarily to assist teachers who had attended the University in securing positions and to furnish schools with trained and efficient instructors. At the request of many school officials, however, the services of the Bureau have been placed at the disposal of every good teacher in the State. This has been done because of the scarcity of trained teachers and because of the difficulty county superintendents and high school principals often encounter in filling vacancies. Superintendents, principals, and teachers throughout the State are invited to co-operate with the Bureau to the end that the cause of education in Florida may be furthered. Officials needing trained men or women, and teachers desiring promotion or change, are asked to call upon the Bureau for its aid. No charges are made by the Bureau for its services.

UNIVERSITY SUMMER SCHOOL

(Co-Educational)

June 16—August 8, 1913.
June 15—August 7, 1914.

SUMMER SCHOOL BOARD

STATE SUPT. W. N. SHEATS, A.M., LL.D.
PRES. A. A. MURPHREE, A.M., LL.D.
PRES. EDWARD CONRADI, A.M., Ph.D.

FACULTY (1913)

A. A. MURPHREE, A.M., LL.D.,
President.

JOHN A. THACKSTON, Ph. D.,
Professor of Education and Psychology.

J H. WORKMAN, A.B.,
Professor of English and Civics.

F. W. BUCHHOLZ, A. B.,
Professor of Foreign Languages.

P. W. CORR, A.B.,
Professor of History and Science.

W. S. CAWTHON, A.B.,
Professor of Mathematics.

MISS JESSIE MORRELL,
Professor of Primary Methods.

C. L. WILLOUGHBY, B.Agr.,
Professor of Science.

FACULTY (1914)

A. A. MURPHREE, A.M., LL.D.,
President.

JNO. A. THACKSTON, Ph.D.,
Professor of Education and Psychology.

W. S. CAWTHON, A.M.,
Professor of Mathematics.

P. W. CORR, A.B.,
Professor of History.

E. L. ROBINSON, A.M.,
Professor of Latin.

W. L. FLOYD, M.S.,
Professor of Science.

I. I. HIMES, A.B.,
Professor of English.

MISS JESSIE MORREL,
Professor of Primary Methods.

H. W. COX, Ph.D.,
Professor of Philosophy.

J. N. ANDERSON, Ph.D.,
Professor of Modern Languages and Advanced Latin.

GEO. M. LYNCH, A.B.,
Professor of Rural School Methods and Management.

C. K. McQUARRIE
Director of Corn and Tomato Club Work.

GENERAL STATEMENT

The University Summer School was provided for by the "Summer School Act" passed by the Legislature of 1913. Section 1 of this Act reads in part: "that there is hereby established and created in this State three summer schools to be located as follows: One in connection with the University of Florida at Gainesville, ... "

The entire equipment of the University is at the service of the faculty and students of the Summer School. The libraries, laboratories, dormitories, and dining-hall are open during its session.

Board and lodging (including lights) will be offered at $4.00 per week, or $30.00 for the entire session of eight weeks, payable in either case in advance. Those occupying dormitory rooms must, however, furnish their own pillows, bed linen, and towels.

Attention is directed to the following sections of the "Summer School Act."

CREDIT TOWARDS NORMAL SCHOOL AND COLLEGE DEGREES

Sec. 5.—"All work performed at the said Summer Schools shall be of such character as to entitle the students doing the same to collegiate, normal or professional credit therefor, and may be applied toward making a degree."

EXTENSION OF TEACHERS' CERTIFICATES

Sec. 6.—"All teachers attending any one of the Summer Schools herein created and whose work entitles them to credit therefrom upon making proof of the same to any County Superintendent of Public Instruction in this State are hereby entitled to one Year's extension on any teacher's certificate they may hold and which has not fully expired."

Certificates of credit making proof of the work done will be granted by the State Superintendent and the President of the Summer School only to those teachers who attend the full term and whose work is satisfactory.

REGULATIONS.—To fulfil its highest mission the Summer School should not be utilized merely for the purpose of "cramming" for examinations. It is therefore hoped that all teachers will recognize the wisdom of the Summer School Board in establishing the following regulations:

1. No teacher shall be allowed to take more than twenty hours per week of purely academic subjects.

2. No teacher shall take less than five hours per week of profesional work.

3. The maximum number of hours per week, including professional, vocational and academic subjects, shall, in no case, exceed twenty-seven. Two laboratory hours shall count as one hour of academic work.

COURSES OF STUDY

GROUP I.—*Education and Psychology.*—Theory and Practice of Teaching; Psychology; History of Education. (*Each* 5 *hours.*)

GROUP II.—*English.*—Reading and Spelling. (2 *hours.*) —Grammar and Composition; Rhetoric; English Literature. (*Each* 4 *hours.*)

GROUP III.—*Foreign Languages.*—Beginner's Latin; Cæsar; Virgil; French or German. (*Each* 4 *hours.*)

GROUP IV.—*Civics and History.*—Civil Government. (2 *hours.*)—History of the United States and of Florida; General History. (*Each* 4 *hours.*)

GROUP V.—*Mathematics.*—Arithmetic; Algebra; Geometry; Trigonometry. (*Each* 4 *hours.*)

GROUP VI.—*Primary Methods.*—Drawing and Singing. (Time to be arranged by the instructors.)

GROUP VII.—*Science.*—Geography; Physiology. (*Each* 2 *hours.*)—Physical Geography; Botany; Zoology; Physics. (*Each* 4 *hours.*)

GROUP VIII.—*Vocational.*—Nature Study. (2 *hours.*)—Agriculture; Manual Training; Domestic Economy. (*Each* 4 *hours.*)

One advanced course of college grade will be offered in each Group, provided that a sufficient number of teachers apply for it.

SPECIAL DEPARTMENTS

The following departments do not rightly belong under any individual college, and are hence grouped here:

EXPRESSION AND PUBLIC SPEAKING

Mr. Chapman

Expression and Public Speaking.—In the comparatively brief courses offered during the years 1910-1914, particular attention has been given to establishing a correct method of breathing, to correcting faulty articulation, and to teaching the principles of interpretation by voice, gesture, and facial expression. It is believed that the interest shown in the work gives promise of being greatly increased during the coming year, and it is confidently expected that it will be possible to offer a much longer and more comprehensive course than was possible during the year recently closed.

On account of lack of funds a small tuition fee is charged.

MUSIC

Mr. Miller

The department has direction of the University glee, guitar, and mandolin clubs, of the Student orchestra, and of the music at the chapel exercises. Instruction has during the past year been given in voice culture, sight singing, violin and other stringed instruments. To this will be added lessons on the piano.

Vocal.—Special attention is given to teaching control of breath and of singing muscles and to developing power, range, and pureness of tone. All students of vocal music are required to take two lessons a week in sight singing, and students not registered for the regular work are urged to attend the meetings of this class. In connection with this branch an excellent glee club has been organized. During the year several concerts have been given locally and in neighboring cities, and one trip of a week's duration has been taken. In 1913-14 a choral society was formed which, in addition to part singing, undertakes at least one oratorio each year.

Instrumental.—The Director of the department has had years of experience in orchestral work, and has succeeded in developing the University orchestra to a high state of excellence.

During the past year, in addition to training this and the guitar and mandolin clubs, he has devoted a large part of his time to teaching the violin.

Owing to lack of funds for this department a small charge is made for tuition.

PHYSICAL CULTURE AND ATHLETICS

Mr. Pyle

GYMNASTICS.—All Freshmen are required to take three hours per week of gymnasium work under the direct supervision of the Physical Director. In the other classes the work is optional. The course consists of drills with dumb bells, Indian clubs, wands, and free hand; heavy and light work on buck, German horse, parallel bars, horizontal bar, etc.; tumbling and mat; basket ball and other games. The more proficient gymnasts compete for positions on the "Varsity Gymnasium Team," which gives several public performances during the year, and an exhibition during Commencement week.

ATHLETICS.—Assisted by special coaches, when needed, the Physical Director trains the various athletic teams.

DIVISION OF UNIVERSITY EXTENSION

STAFF

ALBERT A. MURPHREE, AM., LL.D.,
President of the University.

P. H. ROLFS, M.S.,
Director.

C. K. McQUARRIE,
State Agent in Charge of Farmers' Co-operative Demonstration Work and Farmers' Institutes.

A. P. SPENCER, M.S.,
Vice-Director and Animal Industrialist to the Experiment Station. Farmers' Co-operative Demonstration Work.

E. S. PACE, B.S.,
District Agent for North and West Florida, Farmers' Co-operative Demonstration Work, and Assistant in Farmers' Institutes.

J. J. VERNON, M.S.A.,
In Charge of Agricultural Correspondence Courses.

J. A. THACKSTON, Ph.D.,
In Charge of Correspondence Courses of the Teachers College and Normal School.

J. M. SCOTT, B.S.,
Lecturer on Farm Crops and Animal Husbandry.

B. F. FLOYD, A.M.,
Lecturer on Citrus.

J. R. WATSON, A.M.,
Lecturer on Insects.

JOHN BELLING, B.Sc.,
Editor.

BESSIE V. GLOVER,
Secretary.

GENERAL STATEMENT

This Division is carried on for the purpose of extending the benefits of the University to every community in Florida. The material advantages to be thus derived by the State cannot be overestimated, and have already been felt in nearly every county. Since Florida is essentially an agricultural State, the Division concerns itself mainly, although not exclusively, with agricultural interests.

The work of the Extension Division has been broadened from time to time, until now it includes the following more or less definite lines:

(1) Institutes: (a) Farmers' Institutes,
(b) Women's Institutes,
(c) County Institutes and Produce Contests,
(d) Institute Train.
(2) Publications.
(3) Correspondence Courses.
(4) Farmers' Co-operative Demonstration Work.
(5) Field Instruction.
(6) Field Institutes.
(7) School for Demonstration Agents.
(8) Boys' Corn Clubs.
(9) Girls' Canning Clubs.

INSTITUTES

FARMERS' INSTITUTES.—*Farmers' Institutes* bring directly to the workers of the soil the discoveries of the Agricultural Experiment Station and the latest teachings of the College of Agriculture, and present them so that they can be easily understood. They are really short courses in agriculture. In the older States, where they have been held for a number of decades, the teaching is done as carefully as in any college or university. In Florida they have been so systematized that the largest and best results possible are obtained. The amount of this work that can be done depends, however, directly upon the amount of support received.

The professors of the College of Agriculture and the staff of the Experiment Station give as much time as possible to Farmers' Institute lectures. The professors are engaged primarily in teaching and the Experiment Station staff primarily in investigating agricultural problems; necessarily there are many times when it

would be disastrous to the Experiment Station or to the College for the various workers to leave the University grounds.

How Organized.—When it is thought desirable to hold an Institute in a community, arrangements are to be made with the Director of the Extension Division. At a first meeting the local people should elect a president and secretary, whose duties are to arrange for taking care of the audience, select a suitable meeting place, advertise the Institute, and secure as large an audience as possible.

In the last three years calls for Farmers' Institutes have been so numerous and the funds for carrying them on so limited that it has been necessary to put nearly all on circuits. In special cases, however, it is possible and advisable to hold isolated Institutes, as, for instance, when in a restricted locality there is a severe outbreak of certain insects or of certain diseases that need to be handled by a specialist. Arrangements for such Institutes must be made directly with the head of the Division. These Institutes are among the most profitable, but can be held only when conditions are such as not to interfere too seriously with the regular work of the specialist.

Equipment.—The Farmers' Institute squads are equipped with the best and most complete appliances. For the lecture work, sixty large charts, each six feet square, are used. These tabulate the lectures in such a way as to make the main points stand out clearly before the audience. To supplement the charts, about one hundred enlarged photographs, illustrating particular points, are carried. A stereopticon lantern, equipped for acetylene gas or electrical attachments, is frequently found of use. With it are carried about three hundred views, varied enough to suit the interests of almost any part of the State.

Results.—The results from systematic work in Farmers' Institutes are felt almost immediately in the general improvement of agricultural conditions. In Florida, the activities of the Farmers' Institutes have been coincident with the greatest improvement in crop production that the State has ever seen. Taking corn as an illustration, the crop for 1907 was the largest produced up to that time, 4,351,000 bushels. That year 42 sessions of Institutes were held, with a total attendance of 4,491. The average corn production was 9.6 bushels per acre. In 1908, 6,584,000 bushels of corn were produced, at the rate of 10.5 bushels per acre. Dur-

ing this year 54 sessions were held, with a total attendance of 5,576. In 1909 the corn crop amounted to 8,379,000 bushels, with an average production of 12.6 bushels per acre. That year nearly 100 Institutes were held, with a total attendance of about 10,000. During the fiscal year ending June 30, 1913, 200 sessions of Institutes were held, with a total of 20,000 in attendance. The corn production of the State for 1913 rose to 15 bushels per acre, over fifty per cent increase of yield per acre since the beginning of systematic Farmers' Institute work. The total was 10,125,000 bushels. As corn shipped in from outside was selling at $1.00 to $1.20 a bushel, the total value of the crop must have been over $10,000,000, making corn second in money value only to citrus. The actual value of the corn crop exceeds that of citrus. A large amount of it is used for food. The rest of it is fed to stock. Thereby the farm is enriched and money is derived from the sale of the stock.

As the majority of the sessions held in 1913 were designed for the betterment of the soil and for the improvement especially of the corn crop, the Institutes must have had more or less beneficial effect upon the production.

Other crops have been similarly improved; but corn, being the standard, serves best for illustrative purposes. And the increased production, due for the most part, or entirely, to better farming methods, has added millions of dollars annually to the revenues of the farmers of the State.

Women's Institutes.—As it is quite as important to disseminate information that will benefit farm homes as it is to teach improved methods of agriculture, *Women's Institutes* are now being held in nearly all the Southern States. The two movements go hand in hand, for better crops and better farms are one step in the direction of better homes. The Women's Institutes are perhaps the more important, for it is well known that farm homes are less likely to be supplied with modern utensils and to be managed properly than are the farms themselves.

Four years ago, with the co-operation of the Department of Home Economics of the State College for Women, the holding of Women's Institutes was begun in Florida. These Institutes have been so successful that the Legislature has appropriated to the College for Women a sufficient sum of money to continue holding them. They are held in conjunction with the Farmers' Institutes.

Women's Institutes have been arranged in several different places since July 1, 1913. A member of the faculty of the State College for Women has assisted by discourses, lectures, and demonstrations on different phases of home life: Sanitation in and about the home; food values of meat, cereals and vegetables, and the different methods of preparing them; furnishing the various rooms of the house, especially dining-room and kitchen, so that the labor of the household may be lessened and made more effective. At each place the women organize a Home Improvement Club, electing a president, vice-president, secretary and treasurer. These clubs are a basis for more aggressive work, and are useful agencies for the improvement of rural society.

County Institutes and Produce Contests.—*Produce Contests* have been conducted in connection with *County Institutes* in Gadsden, Liberty, and Polk Counties. Small prizes for farm products, ranging from 50 cents to $5.00, were offered by merchants and other residents for the purpose of stimulating greater interest among the farmers. Additional prizes were subscriptions to the "Progressive Farmer," "Southern Planter," and "Florida Grower." These contests have resulted in the bringing together of exhibits of farm products and live stock which in quality would compare favorably with those at county fairs.

Institute Train.—By running, in co-operation with the University of Florida, "Better-Farming Specials," the railroads of the State have indicated in previous years their desire to assist in agricultural development. This year, owing to lack of funds, the Extension Division of the University was not able to engage in a similar undertaking. Several trains, equipped and financed entirely by the railroads, were, however, run, although none of these made long trips. As far as possible the Extension Division co-operated in this work, and especially with the G. S. & F. R. R. in its effort to develop the farming lands in Florida through which its trains pass.

The Extension Division also joined the Southern R. R. in the endeavor to interest more farmers in dairying and to put this industry on a better basis. The "Dairy Train" sent out for this purpose had good results. In every way possible, too, it furthered the purposes of the "Good Roads Train."

During the fall of 1914 a "Better Farming Special" train will be run over the more important railroads of the State. This train

will be better equipped and should serve more people than the one run in 1911.

ATTENDANCE.—During the fiscal year ending July 1, 1913, upwards of 200 sessions of Institutes were held and over 400 addresses were delivered. More than 20,000 people were in attendance.

SPEAKERS FROM UNIVERSITY OF FLORIDA:

A. A. Murphree, President.
P. H. Rolfs, Director of Experiment Station and of Extension Division.
C. K. McQuarrie, State Agent in Charge of Farmers' Co-operative Demonstration Work.
A. P. Spencer, Vice-Director of Extension Division and District Agent, Farmers' Co-operative Demonstration Work.
J. J. Vernon, Dean, College of Agriculture.
J. M. Scott, Animal Industrialist, Agricultural Experiment Station.
Harvey W. Cox, Professor of Philosophy and Education.
E. W. Berger, State Nursery Stock Inspector.
B. F. Floyd, Plant Physiologist, Agricultural Experiment Station.
S. E. Collison, Chemist, Agricultural Experiment Station.
John Belling, Assistant Botanist, Agricultural Experiment Station.
W. L. Floyd, Professor of Horticulture.
H. E. Stevens, Plant Pathologist, Agricultural Experiment Station.
J. R. Watson, Entomologist, Agricultural Experiment Station.
O. F. Berger, Asst. Plant Pathologist, Agricultural Experiment Station.
C. L. Willoughby, Professor of Dairying and Animal Husbandry.

OTHER SPEAKERS:

C. S. Bushnell, Arcadia, County President, Farmers' Union.
C. K. Allan, Sopchoppy, Supt. Public Instruction, Wakulla County.
O. L. Mizell, Dukes, County Agent, Farm Demonstration Work.
T. Z. Atkeson, Live Oak, County Agent, Farm Demonstration Work.
R. E. Rose, Tallahassee, State Chemist.
E. H. Sellards, Tallahassee, State Geologist.
J. L. Shepard, Greensboro.
C. H. Simpson, Milton.
R. W. Storrs, DeFuniak Springs.
Edward Conradi, Tallahassee, President, State College for Women.
H. E. Savely, Washington, D. C., Field Agent, Farmers' Co-operative Demonstration Work, U. S. Department of Agriculture.
W. N. Conolly, Jacksonville, Secretary, Board of Trade.
Joseph Y. Porter, Jacksonville, Secretary, State Board of Health.
W. A. Hendry, Perry.
J. D. Rooney, Ocala, Secretary, Board of Trade.
R. E. Grabel, Charlotte, N. C., Farm Improvement Agent, G. S. & F. R. R.
Miss A. E. Harris, Tallahassee, Director, Household Economics, State College for Women.
Miss Mae L. Wells, Tallahassee, Asst. in Extension Division, State College for Women.
Jack Peters, Tavares, Agricultural Adviser, Lake County Improvement Association.
Dr. A. C. Drach, Atlanta, Ga., U. S. Bureau of Animal Industry.
D. R. McQuarrie, Madison, County Agent, U. S. Farm Demonstration Work.

Mrs. Marian A. MacAdow, Punta Gorda.
Hon. W. A. McRae, Tallahassee, Commissioner of Agriculture.
W. H. Harns, Sopchoppy.
Clarence Woods, Eustis.
W. L. Watson, Jacksonville, County Agent, U. S. Farm Demonstration Work.
C. F. Dawson, Jacksonville, State Veterinarian.
B. F. Bahnsen, Atlanta, Ga., State Veterinarian.
E. M. Nighbert, Atlanta, Ga., Expert in Tick Eradication, U. S. Bureau of Animal Industry.
Hon. J. W. Barber, Macclenny, President, State Live Stock Association.
F. E. Waldrup, Macon, Ga., Field Agent, G. S. & F. R. R.
L. E. Dozier, Leesburg.
Miss Flora Brown, Tavares.
B. L. Hammer, Tampa.
Dr. H. G. Bystra, Holder.
George N. Bressler, Tavares.
J. D. Molter, Gainesville.

OFFICERS OF LOCAL FARMERS' INSTITUTES:

Alachua County—

Island Grove: J. R. Shaw, Pres.; H. M. Baker, Secy.
Trenton: C. A. Williams, Pres.; R. H. Jones, Secy.

Baker County—

Macclenny: W. C. Thompson, Pres.; Tait Powell, Secy.

Bay County—

Lynn Haven: W. R. S. Burnett, Pres.; Frank McMullen, Secy.
Panama City: Judge West, Pres.; H. G. Mathis, Secy.

Bradford County—

Heilbron: J. D. McCormick, Pres.; J. E. J. Wainwright, Secy.
Lake Butler: O. L. Mizell, Pres.; H. W. Hodges, Secy.
Providence: J. D. Stencil, Pres.; P. T. Taylor, Secy.
Worthington Springs: W. Williams, Pres.; T. B. Edwards, Secy.

Brevard County—

Eau Gallie: Dr. E. E. Macy, Pres.
Jamestown: J. H. Tiffany, Titusville, Pres.; Guy Austin, Secy.
Malabar: W. J. Jons, Pres.

DeSoto County—

Arcadia: C. S. Bushnell, Pres.; Harry Burton, Secy.
Avon Park: Wm. King, Pres.; Norton T. Smith, Secy.
Bermont: E. E. Bailey, Pres.; G. W. Gatewood, Secy.
Fort Ogden: Jno. E. Williams, Pres.; Dr. W. H. Smoke, Secy.
Popash: Jos. Crews, Wauchula, Pres.; J. C. Carter, Crewsville, Secy.
Venus: B. F. Johnson, Pres.; J. M. Frye, Secy.
Wauchula: T. G. Wilkerson, Pres.; T. S. Golden, Secy.

Escambia County—

Cottage Hill: C. W. McDonald, Pres.
Ferry Pass: R. E. Jones, Pensacola, Pres.; Mrs. M. H. Fairchild, Pensacola, Secy.
Gonzales: C. J. Hudgins, Pres.
Klondike: J. W. Jefferson, Cantonment, Pres.
Myrtle Grove School: Mrs. M. E. Graves, Pres.; F. L. Thompson, Secy.

Gadsden County—

Greensboro: Hon. J. L. Shepard, Pres.; M. N. Smith, Secy.
Havana: A. J. Smith, Pres.; C. D. Wilcox, Secy.

Hamilton County—

Jennings: B. W. Wells, Pres.; B. J. W. Blair, Secy.

Hernando County—

Brooksville: J. C. Nugent, Pres.; C. W. Colley, Secy.

Hillsboro County—

Knights: W. T. Watkins, Pres.; A. W. Carlton, Secy.
Lake Magdalene: Dr. A. G. Lowe, Pres.; B. E. Stall, Secy.
Ruskin: H. L. Buckley, Pres.; J. S. Jones, Secy.

Holmes County—

Bethlehem: Jno. Sylvester, Black, Ala., Pres.; J. E. Kelly, Black, Ala., Secy.
Bonifay: J. McLaughlin, Pres.; W. A. Sessoms, Secy.
Sandy Creek: Miss Mary Lou Mathis, Secy.

Jackson County—

Malone: B. H. Hatton, Pres.; E. E. Anderson, Secy.

LaFayette County—

Mayo: D. C. Geiger, Pres.; J. J. Handley, Secy.

Lake County—

Clermont: C. H. Wilson, Pres.; H. E. Cook, Secy.
Grand Island: I. H. Adair, Tavares, Pres.; J. T. White, Tavares, Secy.
Groveland: W. A. Lyons, Pres.; G. A. Free, Secy.

Leon County—

Woodville: Hon. A. E. Register, Pres.; T. J. Appleyard, Jr., Secy.

Liberty County—

Bristol: M. N. Herndon, Pres.; J. E. Peddie, Vice-Pres.; D. H. Freeman, Secy.

Madison County—

Lee: H. J. Jones, Pres.; G. W. Ponder, Secy.
Greenville: J. W. Grubbs, Pres.; H. W. James, Vice-Pres.; W. M. Taylor, Secy.
Madison: Prof .W. B. Cate, Pres.; W. M. Taylor, Secy.

Marion County—

Fort McCoy; H. W. Pilsbury, Pres.; Miss M. H. Scott, Secy.
Reddick: H. E. Tinker, Pres.; L. S. Light, Secy.
Summerfield: A. M. Buser, Pres.; H. R. L. White, Secy.

Nassau County—

Boulogne: A. L. Kilbury, Pres.; Miss Louis Cutler, Secy.
Callahan: W. W. Cushing, Pres.; D. H. Petree, Secy.
Hilliard: J. H. Topper, Pres.; A. G. Vensel, Secy.

Orange County—

Zellwood: C. H. Baker, Pres.; Wm. Edwards, Secy.

Osceola County—

St. Cloud: F. P. Wentworth, Pres.; W. P. Lynch, Secy.

Pasco County—
Zephyrhills: O. E. Briggs, Pres.; U. G. Clark, Secy.

Pinellas County—
Largo: W. A. Belcher, Pres.; H. J. Bosworth, Secy.

Polk County—
Davenport: F. B. Hitchcock, Pres.; H. E. Sands, Secy.
Ft. Meade: R. W. Hancock, Pres.; Kline O. Varn, Secy.
Lakeland: Judge W. S. Preston, Pres.; Dr. W. H. Conibear, Secy.

Putnam County—
Mannville: H. T. Mann, Pres.

Santa Rosa County—
Allentown: R. T. Oglesby, Pres.; Oliver Jernigan, Secy.
Baker: John Wilkerson, Pres.; J. L. Miller, Secy.
Camp Walton: W. H. Hartgrove, Pres.
Milton: C. H. Simpson, Pres.; S. J. Harvey, Secy.
Wallace: Curtis Jernigan, Pres.; J. H. Haines, Secy.

St. Johns County—
St. Johns Park: B. F. Warner, Secy.

Sumter County—
Webster: Prof. Glen Terrell, Pres.; L. L. Sutton, Secy.

Suwannee County—
Live Oak: W. J. Hillman, Pres.; Jack Hawkins, Secy.

Taylor County—
Perry: J. C. Calhoun, Sr., Pres.; W. A. Hendry, Secy.

Wakulla County—
Ivan: T. S. Green, Ben Haden, Pres.; J. B. Gowdy, Ben Haden, Secy.
Medart: C. B. Pigott, Arran, Pres.; Wm. Green, Arran, Secy.
Sopchoppy: W. H. Harms, Pres.; Prof. C. K. Allen, Secy.

Walton County—
Glendale: Wm. Murphy, Pres.; J. W. Henderson, Secy.
Knox Hill: N. A. McLeod, Pres.; J. L. King, Secy.
Santa Rosa: W. M. Wilson, Pres.; A. B. Cessna, Secy.

Washington County—
Chipley: J. R. McColsky, Pres.; C. E. Pleas, Secy.

PUBLICATIONS

The publications of the Extension Division differ from the bulletins of the Experiment Station in that the former are either reprints of Experiment Station bulletins or compilations from other sources, whereas the latter are based upon fundamental experiments that have been carried on by means of the Experiment Station funds.

The following bulletins have been issued by the Extension Division:

112. Tomato Insects, by J. R. Watson.
117. Tomato Diseases, by P. H. Rolfs.
118. Sugar Cane and Syrup Making, by A. P. Spencer.
119. Fungus Diseases of Scale Insects and Whitefly, by P. H. Rolfs and H. S. Fawcett.
120. Irish Potatoes, by A. P. Spencer.

In addition to these, numerous press bulletins have been issued.

CORRESPONDENCE COURSES

Correspondence courses for teachers, farmers, farmers' wives, and others, are being offered. For a description of these and registration requirements, see under College of Agriculture, page 100, and under Teachers College and Normal School, page 150.

FARMERS' CO-OPERATIVE DEMONSTRATION WORK

The Farmers' Co-operative Demonstration Work originated with the Southern Educational Board, who appropriated $10,000 to better rural conditions in Florida. On the advent of the boll weevil the Farmers' Demonstration Work was provided for by a Congressional appropriation of about $20,000. In 1911 the Florida legislature appropriated $5,000 annually; thus making a total of $25,000 for carrying on Demonstration work.

In 1909 the Hon. A. S. Meharg, of Mississippi, was sent to Florida as State Demonstration Agent. Under his leadership good progress was made. In 1913 twenty-four counties were organized, each with a County Demonstration Agent. On July 1, 1913, the Department of Agriculture reluctantly accepted Mr. Meharg's resignation owing to his failing health. Following this, arrangements were entered into with the University of Florida, by which the Farmers' Co-operative Demonstration Work became a department of the Extension Division of the University with headquarters on the campus. On January 7, 1914, Mr. C. K. McQuarrie began his work as State Agent.

The magnitude and character of the undertaking demand the undivided time of a separate corps of workers. These carry directly to the farmer the accepted principles of agricultural science and the latest discoveries.

Organization.—The State officers of the Farm Demonstration Work consist of a Director, a State Agent, District Agents, and County Agents.

The *Director* acts in an advisory way in shaping and directing the policies of the Farmers' Co-operative Demonstration Work.

The *State Agent* has direct supervision over the Demonstration Work in Florida as outlined by the Office of Farmers' Co-operative Demonstration Work, Washington. His duties are primarily administrative. Through the District and County Agents he directs and manages all undertakings.

The *District Agent* directs the County Agents, assists them in organizing so as to make their work more effective, visits the co-operative farmers with the County Agents as far as practicable, and directs the Boys' Club Work throughout his district. Florida has two Demonstration Districts: the western comprising the counties from the Suwannee westward; the southern including the counties east and south of the Suwannee.

The *County Agent* is usually selected from his home county. In most cases he is chosen because he has made a success of his own farm. His work is to enlist the co-operation of the farmers of his county and to induce them to grow two or more staple crops according to the best methods. He will solicit such co-operation from as many farmers as he can visit at least as often as once every thirty days. He keeps a complete record of all operations and files weekly reports with the District and State Agents, by whom these reports are forwarded to the main office in Washington, D. C.

The sum of six hundred and seventy-five ($675.00) dollars of Federal funds is allotted to each county of Florida that takes up the Co-operative Demonstration Work. This Demonstration work will be extended, in so far as co-operation is found and funds are available, until it covers all the counties of the State. Up to the present time it has been possible to accommodate all of the counties that have made an organized effort to secure a County Demonstration Agent. Other counties wishing to avail themselves of government funds for Demonstration Work should confer with the State Agent, Gainesville, Florida.

STAFF

ALBERT A. MURPHREE,
President of the University.

BRADFORD KNAPP,
Special Agent in Charge of Farmers' Co-operative Demonstration Work, for U. S. Department of Agriculture, Washington, D. C.

P. H. ROLFS,
Director for University.

C. K McQUARRIE,
State Agent, Farmers' Co-operative Demonstration Work, Bureau of Plant Industry, U. S. Department of Agriculture.

A. P. SPENCER,
District Agent for Central and South Florida.

E. S. PACE,
District Agent for North and West Florida.

AGNES ELLEN HARRIS,
Assistant Agent for The Florida State College for Women—In Charge of Girls' Canning Clubs.

BESSIE V. GLOVER,
Secretary.

COUNTY DEMONSTRATION AGENTS

County	*Agent*	*Postoffice*
Baker	E. W. Turner	Macclenny
Bradford	O. L. Mizell	Dukes
Columbia	J. D. Brown	Lake City
Duval	W. L. Watson	Jacksonville
Escambia	S. W. Hiatt	Gonzalez
Gadsden	M. C. Gardner	Greensboro
Hillsboro	R. T. Kelley	Plant City
Holmes	C. A. Fulford	Bonifay
Jackson	G. W. Belser	Marianna
Lafayette	D. C. Geiger	Mayo
*Lake	Jack Peters	Tavares
Levy	W. E. Brown	Williston
Leon	Frank Robinson	Tallahassee
Liberty	A. W. Turner	Bristol
Madison	D. R. McQuarrie	Madison
Marion	S. J. McCully	Berlin
Orange	C. H. Baker	Zellwood
Pasco	I. E. Soar	Dade City
Polk	A. A. Lewis	Kathleen
Santa Rosa	O. O. Simmons	Botts
Suwannee	T. Z. Atkeson	Live Oak
Walton	J. C. Smith	DeFuniak Springs
Washington	D. G. McQuagge	Chipley

*Not under government supervision.

FIELD INSTRUCTION

In addition to the regular instruction given by the farm demonstrators and co-operators in each of the several counties, County Demonstration Agents give field instruction to farmers so far as their time permits. This instruction consists of advice as to the best methods of conducting farm operations. Each County Agent is required to be familiar with books and bulletins pertaining to farming, live stock, and horticulture.

FIELD INSTITUTES

The County Demonstration Agents will pay special attention to holding Field Institutes in the various counties. Such Institutes must be arranged so that they will aid in the demonstration work and not interfere with it. During the crop growing season Institutes will be held and farmers assembled at the farms that are especially useful as object lessons in the matter of crop production.

General "round-ups" and County Institutes will be held at the seasons of the year when the farmers can best afford to take time for educational work. Each County Agent will make it his special duty to look after the holding of these Institutes. The State Demonstration Agent will make arrangements for the lecturers and speakers for each Institute and the people interested will secure a central location and give notice of the meeting to the farmers of the county.

SCHOOL FOR DEMONSTRATION AGENTS

The Demonstration Agents are assembled annually at the University for a week's instruction. This instruction takes a wide range, since it includes the whole list of agricultural subjects of study. During the week the agents are given special instruction in the best methods of presenting these subjects to the demonstrators of the various counties.

BOYS' CORN CLUBS

Each Boys' Corn Club is conducted directly under the supervision of a County Demonstration Agent in co-operation with the local school and County Superintendent. Encouragement and help are given to all boys who enlist for the work, the hearty co-operation of schools is secured, the teachers' sympathy is enlisted,

and thus much good is done in the farming communities of the State.

All the boys in a community between the ages of ten and eighteen are eligible for membership in a club. Each member is required to grow at least one acre of corn, and it happens not infrequently that the boy raises more bushels to the acre using the new methods than does the father using the old.

The awards for the boys are made upon the following basis:

		Per Cent
1.	Greatest yield per acre	30
2.	Best exhibit of 10 ears	20
3.	Best written account, showing history of crop	20
4.	Best showing of profit on investment, based on the commercial price of corn	30
	Total	100

GIRLS' CANNING CLUBS

This work is carried on by Professor Agnes Ellen Harris, of the State College for Women, under the direction of the State Agent, among the school girls and in co-operation with the schools, especially the rural schools, of the several counties of the State. The clubs have been productive of great good, in that they have taught hundreds of families the best methods of canning and preserving farm products. They have also helped many girls to earn a small amount of extra money, and have even enabled some to attend college.

All the girls of a community between the ages of ten and eighteen are eligible to club membership. Each member is required to grow at least one-tenth of an acre of tomatoes or other vegetables.

The final awards are made upon the following basis:

		Per Cent
1.	Quality	20
2.	Quantity	20
3.	Variety	20
4.	Profit	20
5.	History	20
	Total	100

AGRICULTURAL EXPERIMENT STATION

STAFF

ALBERT A. MURPHREE, A.M., LL.D.,
President of the University.

P. H. ROLFS, M.S.,
Director.

JOHN M. SCOTT, B.S.,
Animal Industrialist and Assistant Director.

B. F. FLOYD, A.M.,
Plant Pathologist.

J. R. WATSON, A.M.,
Entomologist.

H. E. STEVENS, M.S.,
Plant Pathologist.

S. E. COLLINS, M.S.,
Chemist.

JOHN BELLING, B.Sc.,
Assistant Botanist and Editor.

O. F. BURGER, M.S.,
Assistant Pathologist.

S. S. WALKER, M.S.,
Assistant Chemist.

JOHN SCHNABEL,
Assistant Horticulturist.

ROBERT S. HOLLINGSHEAD, A.B.,*
Assistant Chemist.

EDGAR NELSON, A.B.,*
Assistant Plant Physiologist.

A. C. MASON, B.S.,
Laboratory Assistant in Entomology.

JULIUS MATZ, B.S.,
Laboratory Assistant in Plant Pathology.

MISS ETTA MEANS,
Librarian.

*Temporary appointment.

PURPOSE.—The Agricultural Experiment Station is an institution, founded by Congressional Act, the purpose of which is to acquire and diffuse useful agricultural knowledge. From the enacting clause, it is very clear that the intention of Congress was to establish with every agricultural college and university receiving the benefits of the original land-grant Act, an institution for purely investigational work. The Florida Experiment Station was founded in 1888, and has continued without interruption since that time. Since its funds are received from a Federal source, it must comply with the requirements of the Federal law. It should therefore be clearly understood that the Experiment Station fund is not intended, directly or indirectly, for teaching purposes, but for the purpose of acquiring new and important knowledge in regard to agricultural crops or agricultural soils. In order to receive the benefits of the Adams fund, it is necessary to plan the experiments and submit them to the United States Department of Agriculture for approval before any of the moneys are spent in the investigations.

PUBLICATIONS.—The publications of the Experiment Station are restricted to a report of the work done by members of the Staff. The printing of compilations and information of a general nature is not permissible under the funds.

There are three series of publications:

The Experiment Station Bulletins, each of which represents a more or less complete thesis on some particular line of work directly connected with the agriculture or horticulture of the State. In this series, 120 bulletins have been published. These are divided about equally between agriculture and horticulture. These bulletins must be issued as often as once in three months, and as many more times as may be thought advisable.

Press Bulletins are issued at short intervals, usually only a week elapsing between the different numbers. As the name indicates, these bulletins are prepared especially for the newspapers of the State. They announce new and important discoveries, and give other information directly connected with the activities of the Experiment Station that is known to be of immediate importance to the agricultural and horticultural people of the State. Two hundred and seventeen of these have been issued.

Reports to the Governor and to the Department of Agriculture are required annually. These contain a financial statement of

the distribution of the funds of the year before; also a brief résumé of the work done by the Experiment Station as a whole, and by the various departments in detail. Twenty-three annual reports have been issued.

Over a million pieces of mail matter have been distributed under the Experiment Station frank.

Lines of Investigation.—The work of the Florida Experiment Station is not sharply divided as to the different departments. The workers in the Experiment Station formulate what are known as projects. In these projects the work is carried out to the ultimate limits of the ability of the worker and the resources of the institution. A piece of investigation, once begun, is continued regardless as to whether its ramifications take it into one department or another. Not infrequently two or more departments are concerned in the solving of one project. Naturally, the lines of investigation fall into several departments: Horticulture, including plant breeding, plant introduction, propagation, etc.; Animal Industry, including the study of feed crops, the effect of feeding certain crops to cattle and hogs, and the growing of feed and forage crops; Agronomy, including the breeding of cotton, corn, and other farm crops; Plant Pathology, including the study of plant diseases produced by fungi and bacteria; Plant Physiology, including the study of plants as affected by fertilizer and soil conditions; Chemistry, including the study of fertilizers and soils, especially as to the effect on plants; Entomology, including the study of insecticides, insects, and their parasites.

Resources.—The resources of the Experiment Station have up to the present been limited to the funds received from the Federal Government. The Hatch fund became available in 1888; from this $15,000 has been received annually. In 1906 a further appropriation of $5,000 became available from the Adams fund. This fund increased by $2,000 annually, until it reached its limit of $15,000, making a total annual income of $30,000. Only five per cent of this fund can be used for building purposes, and that only when the experiments require this to be done. None of the money can be used directly or indirectly for teaching purposes or for paying for holding Farmers' Institutes. The Experiment Station has been in the present location since January 1, 1907. Since that time the laboratories have had to be established in the new location, the fields for agricultural and horticultural work

have had to be put into proper shape for experimentation, and other material has had to be collected.

New Laboratory Building.—The Legislature of 1907 appropriated $40,000 for the construction of a suitable laboratory building, which was completed during the summer of 1910 and occupied during August. It affords suitable laboratories and offices for the Staff of the Experiment Station, Extension Division, Co-operative Demonstration Work, and the Inspector of Nursery Stock. It is a three-story brick structure, containing about 18,000 square feet of floor space. This addition to the equipment is of great advantage to the State, since it increases the efficiency of all the workers—some to the extent of fifty per cent.

Advantages of Location.—The advantages of having the Experiment Station at the University cannot be easily over-estimated. The fields and orchards used for experiment work are open to the inspection of students and visitors. An experiment field is different from a demonstration field, inasmuch as no attempt is made to produce show crops or to do those things that a farmer can readily do for himself, but to discover unknown facts. The laboratories of the Experiment Station are planned and conducted for purely investigational work. This permits the students to observe and study investigational laboratories, and scores of those who have special inclinations in the direction of the lines of investigation carried on have had an opportunity to do some work in assisting the specialists.

The investigators in the Experiment Station deliver at frequent intervals popular and technical lectures either to the student-body as a whole or to special clubs and local organizations. This gives the students an opportunity of listening to lectures of an advanced nature in particular lines of investigation.

Minor positions, such as those of laboratory assistants in the Experiment Station, are open from time to time, and whenever practicable are given to graduates of the University who manifest ability in the special line of investigation. These laboratory assistants are paid a small salary for half of their time, and during the other half are free to take studies in the University leading to a higher degree.

Projects.—Some of the more important projects as outlined for the Experiment Station work are as follows:

1. The comparison of the Florida velvet bean with bran, silage, and other feeds for milk production.

2. The comparison of home-grown roughage with the ordinary commercial roughage for producing milk.

3. The determination of the value of Florida-grown feeds for beef production.

4. The determination of the value of Florida-grown feeds for pork production.

5. The breeding of a thoroughbred long-staple cotton that will meet the requirements of the average market.

6. The breeding of legumes for larger crop production under Florida conditions, especially the Lyon and velvet beans, and cowpeas.

7. Corn breeding with a view to getting thoroughbred varieties that will produce true to type and produce larger yields.

8. The growing and breeding of velvet bean hybrids.

9. The citrus orchard, which ultimately should include all of the earlier and more hardy varieties of citrus fruits.

10. A vegetable garden in which tests are made of various vegetables, and breeding work conducted for the production of disease-resistant varieties.

11. Hardy fruit orchard in which occur new and promising but hitherto untested fruits.

12. Plant-testing plots. In these occur over five hundred numbers of varieties of various kinds of economic plants not heretofore tested in Florida. The seeds are obtained from all parts of the world, selections being made from regions similar in climate to Florida.

13. The growing of forage crops useful for horses, cattle, and swine.

14. The making of a permanent pasture.

15. Soil and fertilizer studies. These include (a) the effect of quantity and kind of chemicals applied to citrus trees; that is, their effect upon the composition of the leaves, wood, and fruit, and the physiological effect on the plants; (b) the effect of these same chemicals upon the soil to which they are applied; the loss of the plant-food, either through leaching, or by escaping as gaseous ammonia, or nitrogen.

16. Citrus diseases. This includes a technical study of diseases that have hitherto caused a great deal of loss in the citrus orchard, but have never been worked up from a technical standpoint, such as gumming, buck-skinning, stem-end rot, etc.

17. Citrus whitefly. This investigation consists in the study of the three principal species of whitefly that are pests in the citrus orchard; a study of the life histories, with a view of finding out the most vulnerable points at which they can be attacked; and a study of the natural enemies, together with a study of the best artificial means of controlling the pests.

18. Nutrition and mal-nutrition studies. This includes a study of plant foods, especially in their relation to citrus, and also a study of disorders apparently due to unfavorable soil or to fertilizer conditions.

19. Among the recently introduced plants, which number several hundred, are some that are extremely promising for the State. Rhodes Grass, a native of Central or South Africa, has done extremely well and has been tested in nearly every county of the State. It appears to make a permanent meadow-grass in almost all sections where it is grown on good agricultural land.

Among the leguminous plants that have been introduced from foreign countries the Yokohama velvet bean appears to fill an important niche. This is a native of Japan, and has been nearly unknown until within the last five years. At that time it was not even scientifically described. It is the earliest of the velvet bean family to ripen, requiring about 120 days of summer temperature. As it is resistant to root-knot and pro-

duces a large amount of protein forage early in the year, its use will mark an important advance in our forage production.

The Chinese velvet bean, of which a single seed was received five years ago, is another important leguminous crop. This is especially valuable since it ripens early enough in the fall to keep from being killed by frost, and also early enough to escape serious ravage by the velvet bean caterpillar. It appears to ripen early enough in the year to escape frost in any section of Florida.

The Lyon velvet bean was introduced from the Philippine Islands seven years ago. This has proved to be extremely acceptable to a considerable number of farmers located in various parts of Florida. In general habit it resembles the Florida velvet bean.

20. Five hundred and thirty-three analyses of oranges and grapefruit have been made. These studies were undertaken to establish the relation of the ripening of these fruits to the season. In addition to these, studies of the variation due to different methods of cultivation, different kinds of fertilizers, different kinds of soil, and different varieties, were also taken up. The summary of this work, based on so large a number of analyses, will mark an important advance in our information on this, the leading crop in Florida.

STATE NURSERY STOCK INSPECTION

E. W. BERGER, Ph.D.,
Professor of Entomology and State Inspector of Nursery Stock.

The law (Chapter 6156, Laws of Florida) establishing a system of inspection, regulating the sale and exchange of nursery stock (trees, shrubs, vines, etc., and parts thereof) was passed by the State Legislature of 1911, and approved by the Governor on May 23, of that year. The law places the making of the rules and regulations for carrying into effect the purposes of the Act under the jurisdiction of the Board of Control. It provides for one Inspector and the necessary Deputies and Assistants, and that the Inspector's office shall be in the State Agricultural Experiment Station Building of the University.

The present Inspector, previously Entomologist of the Experiment Station, entered upon the duties of this office on July 1st, 1911. Besides the chief Inspector, ten Deputy Inspectors have been appointed. The duties of these, so far, have been wholly local, to make inspections of stock in the vicinity of the respective communities where they live.

The growing importance and need of the inspection of nursery stock offered for sale and exchange should be emphasized. Not only that, but the State needs a law governing the control of insect pests and diseases in groves and orchards. The man that buys a tree pays for a clean tree, free from insects and diseases; and the grower who realizes the need and importance of keeping injurious insects and diseases of trees under proper control should have recourse through the law enabling him to compel careless or indifferent neighbors to keep under control any injurious insects and diseases, the presence of which upon his neighbors' premises serves as a source of infestation and infection. That a tree overrun with insects or infected with a disease is as much of a menace to the community of trees as a case of small-pox or yellow fever is to the community of human beings, is self-evident; and the owners of orchards and groves are certainly entitled to some protection for their trees. These facts indicate clearly that not only will the inspection and certification of

nurseries have to be amplified by the gradual addition of more help to the inspection staff, but that men trained in a better knowledge of insects and diseases and the methods of control will be needed to inspect groves and orchards as soon as a grove and orchard pest law is passed.

The time is at hand when a better knowledge of insect pests and diseases and the methods of their control is needed in the grove, the orchard, and in the field. What does it profit a man if the whole world be made to bloom, and two blades of grass be made to grow where only one grew before, if, when the insects come and the diseases begin to ravage, he stands idly by unable to stem the tides of destruction? It is not enough to be able to grow a crop, but the grower must be prepared to protect the crop during an emergency, whether this be frost or fire, or insects and diseases. To protect intelligently a crop against injurious insects and diseases requires a certain amount of technical knowledge, and there is no better place to get this than at the University. It is therefore urged that students in agriculture or horticulture, and others who expect to own or operate groves and orchards, now at the University, or who intend to come, take the courses offered along the lines indicated. Having grounded himself in the fundamental knowledge of insects and diseases, the student, as a prospective grower, whether owner, manager, foreman, or expert advisor for his community, knows better where, when, and how to look for tree troubles, how to investigate them for himself, and whether the problem is beyond him and needs the attention of the professional Entomologist, Plant Pathologist or Plant Physiologist; and he knows better how to adapt the known remedies to different localities. Eight years' experience in the State has taught the writer that there are comparatively few men who know how to spray for insects so as to get the best results. With the majority, the operation is a more or less hit-or-miss affair, because they have not the necessary knowledge of insects and diseases to bring to bear upon their work, but are dependent upon prescriptions of so-called experts, or of real experts who, living at a distance, can spend only a little time at the locality where help is needed, or cannot make examination, and may err because of insufficient knowledge of the conditions in the locality. The importance therefore, of having men in each community who have at some

time specialized on insects and diseases and the methods of their control, and whose general interests are more or less bound up with the welfare of that community is apparent.

That Florida has long been in need of a nursery inspection law will be conceded by all who are interested in its horticultural development. The further spread of such pests as the Whitefly of citrus and San Jose Scale of peach and kindred trees, by means of infested nursery stock, is being rapidly checked thereby. The danger of spreading broadcast by means of nursery stock such insects and diseases as Cottony Cushion Scale, California Red Scale, and the Scaly Bark Disease of citrus, all of which are at present localized, or limited in distribution to perhaps two counties, has been reduced to a minimum. By requiring stock shipped into Florida from other States to be inspected and certified (as other States have for some time been requiring of Florida nurserymen), the risk of receiving dangerous insects and diseases on nursery stock from other States is greatly lessened. The regulation requiring all stock from foreign countries brought into Florida to be inspected for dangerous insects and diseases has practically eliminated the danger of receiving any more foreign pests such as Whitefly, San Jose Scale, Cottony Cushion Scale, Mango Scale, and Guava Scale.

That the Inspector frequently has the opportunity to impart information on insects and diseases and to advise with nurserymen and others how best to eradicate them or check their increase, is an educational feature of the work worthy of consideration.

The advantage of having the Inspector's office located in the Agricultural Experiment Station Building at the University cannot be overestimated. The desirability of the Inspector now and then supplementing his own technical and practical information on insects and diseases of plants by consulting with other specialists across the hall or across the University Campus is self-evident. It saves his time and adds to the efficiency of his service, by obviating the necessity of lengthy correspondence when he is in doubt about an insect or a disease. The General and Department Libraries of the University and Experiment Station contain many books, bulletins and other special papers on insects and diseases of plants, which it is frequently necessary and important to consult.

The publications of the office consist of Nursery Inspection Circulars to give information pertinent to the operation of the Law, Rules and Regulations, and other information intended to aid nurserymen and others in checking the spread of dangerous insects and diseases. Six circulars and one report have been published:

Circular 1 gives the Law with the Rules and Regulations.

Circular 2 is an announcement to the Press of the State.

Circular 3 gives Additional Rules and Regulations on the Mexican Cotton Boll Weevil, Mango Weevil, Irish Potatoes, Fruit Flies, and Exceptions to Rule 1 (Nursery Inspection Circular 1).

Circular 4 suspends Rules and Regulations, 34 to 38 (inclusive), on Irish Potatoes until April 1, 1913. (Now suspended indefinitely.)

Circular 5 discusses the desirability of buying only defoliated nursery stock.

Circular 6 is a bulletin on the Mexican Cotton Boll Weevil.

REGISTER

DEGREES, HONORS, AND MEDALS

1912-1913

DEGREES IN COURSE

Master of Arts in Education

Neal, Marvin Llewellyn, A.B., Emory College--------Donnie, Fla.
O'Haver, Pleasant Clator, A.B., DePauw University--Palatka, Fla.

Master of Science

Davis, Albert Gainer, B.S., University of Florida----Chipley, Fla.
Loftin, Ulphian Carr, B.S.A., N. C. A. & M. College--Chapel Hill, N. C.
O'Byrne, Frank McCord, A.B., Miami University----Oxford, Ohio.

Bachelor of Arts

Douglass, Rhodes Clyde----------Pensacola, Fla.
Elliott, Walter Gowan----------Tampa, Fla.
Henderson, Charles William----------Tampa, Fla.
Jarrell, Robert Lee----------Kissimmee, Fla.
Laffitte, Lincoln Sydnor----------Lloyd, Fla.
Leitner, Sumter ----------Kissimmee, Fla.
Morgan, Louie Robert----------Arcadia, Fla.
White, Robert Ray----------Starke, Fla.
Wilson, Robert Borden----------Bartow, Fla.

Bachelor of Arts in Education

Blanton, Robert Solter----------Plant City, Fla.

Bachelor of Science

Casler, Eugene Terry----------Jacksonville, Fla.

Bachelor of Science in Agriculture

Swartz, Howard Villeroy----------Sanford, Fla.

Bachelor of Science in Civil Engineering

Rowlett, Caius Augustus----------Palmetto, Fla.
Shands, Alvin Glen----------Gainesville, Fla.
Thrasher, Leon Brooks----------Micanopy, Fla.
Vidal, Albert ----------Gainesville, Fla.

Bachelor of Science in Mechanical Engineering

Macintosh, Stuart ----------London, England
Taylor, Earle Abbott----------Gainesville, Fla.

Bachelor of Laws

Brooks, Arthur Cecil----------Lake Butler, Fla.
Clayton, Orlando Jay----------Aucilla, Fla.
Cox, Boyd Abel----------Vernon, Fla.
DeVane, Enoch Clayborne----------Plant City, Fla.
Diamond, Charles Peter----------Cora, Fla.

Garrett, George Palmer ---------- Kissimmee, Fla.
Gibson, James Bond, Jr. ---------- River View, Fla.
Godwin, John Luther ---------- Lyons, Ga.
Hocker, Frederick Roche ---------- Ocala, Fla.
Householder, Ernest Ferguson ---------- Manatee, Fla.
Kennedy, Walker McMillan ---------- Umatilla, Fla.
Langston, Bernard Gainer, A.B., University of Florida - Chipley, Fla.
Lawler, Samuel Watson, Jr., A.B., Southern College --- Tallahassee, Fla.
Magaha, Earnest Marion ---------- Jay, Fla.
Mathis, Bascom Vernando ---------- Bonifay, Fla.
McCaskill, James Marshall ---------- Plant City, Fla.
Miller, Oscar Samuel, A.B., University of Florida ---- Folkston, Ga.
Phipps, Claibourne McC., A.B., University of Miss. ---- Terra Ceia, Fla.

CERTIFICATES

Two-Year Course in Agriculture

Means, David L. ---------- Fort White, Fla.
Nieland, Louis Theodore ---------- St. Johns, Fla.

PHI KAPPA PHI

Class of 1914

L. W. Alexander ---------- Law.
W. Blackman ---------- Law.
*H. G. Clayton ---------- Agriculture.
H. G. Conant ---------- Agriculture.
G. C. Crom ---------- Engineering.
W. H. Crom ---------- Engineering.
A. DeWinkeler ---------- Engineering.
R. L. Goulding ---------- Teachers.
F. W. L. Hill ---------- Engineering.
W. L. Hill ---------- Law.
A. W. Knight ---------- Law.
*C. A. Martini ---------- Agriculture.
P. D. Mobley ---------- Law.
P. R. Perry ---------- Law.
J. H. Peterson ---------- Law.
T. C. Ray ---------- Law.
W. H. Schulz ---------- Agriculture.
R. W. Shackleford ---------- Law.
J. R. Springer ---------- Agriculture.
*H. A. Thalimer ---------- Engineering.
L. W. Traxler ---------- Arts and Sciences.

Class of 1915

J. P. Hallowes ---------- Engineering.
S. P. Hahn ---------- Agriculture.

PRIZES

Senior Oratorical Medal ---------- C. P. Diamond.
Junior Oratorical Medal ---------- N. A. Becker.
Declaimer's Medal ---------- L. M. Dow.
Buckman Medal ---------- F. L. Prescott.
U. D. C. Medal ---------- G. B. Knowles.
Callahan and Co's Law Prize ---------- O. J. Clayton.

*Elected in Junior year.

ROLL OF STUDENTS

1913-14

GRADUATE SCHOOL

Blanton, R. S., A.B. (University of Florida) ---------- Plant City
Education — Hillsboro
Campbell, B. C., A.B. (Columbia University) ---------- Gainesville
Psychology — Alachua
Cawthon, W. S., A.B. (University of Chicago) ---------- Gainesville
Mathematics — Alachua
Christian, W. E., B.S. (University of Florida) ---------- McIntosh
Biological Sciences — Marion
Mason, A. C., B.S. (Michigan Agrl. College) ---------- Saline
Biological Sciences — Michigan
Rogers, J. McD., B.S. (Ohio State University) ---------- Madisonville
Agriculture — Ohio
Swartz, H. V., B.S.A. (University of Florida) ---------- Sanford
Agriculture — Seminole
Vuurens, William, B.S. (Wageninger Agrl. College, Holland)
Agriculture — Dosterbeek, Holland

COLLEGE OF ARTS AND SCIENCES

Seniors

Name	*Postoffice*	*State or County*
Bird, T. B.	Monticello	Jefferson
Klingler, H. S.	Butler	Pennsylvania
Swanson, T. J.	Gainesville	Alachua
Traxler, L. W.	Alachua	Alachua
Williams, J. E.	Haskell	Polk
Williams, O. E.	Haskell	Polk

Juniors

Beeler, P. R.	Rock Hill	South Carolina
Brown, M. F.	Lawtey	Bradford
Campbell, A. D., Jr.	Chipley	Washington
Hearin, J. L.	Quincy	Gadsden
Helm, E. B.	Miami	Dade
Peeples, H. W.	Valdosta	Georgia
Reynolds, W. H.	Lakeland	Polk
Robertson, C. A.	Tallahassee	Leon
Terry, R. P.	Lakeland	Polk
Traxler, E. S.	Alachua	Alachua
Yarbrough, T. T.	Miccosukee	Leon

Sophomores

Bishop, B. O.	Gainesville	Alachua
Coarsey, J. M.	Tampa	Hillsboro
Jackson, A. C.	Micanopy	Alachua
Metcalf, L. W.	West Palm Beach	Palm Beach
McElya, N.	Gasparilla	DeSoto
Wood, P. W.	Tampa	Hillsboro

Freshmen

Name	*Postoffice*	*State or County*
Bracken, L. R.	Lakeland	Polk
Brown, G. W.	Lawtey	Bradford
Caswell, C. C.	St. Petersburg	Pinellas
Chillingsworth, C. E.	West Palm Beach	Palm Beach
Cone, A. J., Jr.	Gainesville	Alachua
Dyrenforth, L. Y.	Anona	Hillsboro
Hart, G.	Lakeland	Polk
Henderson, W. B.	Tampa	Hillsboro
Jackson, R. I.	Lakeland	Polk
Martsolf, A. L.	New Brighton	Pennsylvania
Merrick, R. G.	Baltimore	Maryland
McRae, W. A., Jr.	Baldwin	Duval
Oglesby, E. M,	Bartow	Polk
Padgett, E. L.	Jacksonville	Duval
Padgett, S. D.	Lake Butler	Bradford
Patterson, J. B.	Chaires	Leon
Rosenbusch, C. H.	Green Cove Springs	Clay
Street, W. E.	Denver	Colorado
Tillman, J. M.	Bartow	Polk
Wilson, E. F.	New Smyrna	Volusia
Yon, E. M.	Blountstown	Calhoun

Specials

Barrs, N.	Gainesville	Alachua
Barry, W. M.	Newberry	Alachua
Bishop, C. P.	Eustis	Lake
Burnett, P. H.	Bartow	Polk
Gamble, N. E., LL.B. (Yale)	DeLand	Volusia
Hancock, A. R.	Tallahassee	Leon
Hester, H. S.	Tampa	Hillsboro
Hodgson, W. M.	Tampa	Hillsboro
Livingston, J. S.	Boston	Massachusetts
Lotspeich, A. A.	Weaverville	North Carolina
Maguire, J. W.	Chicago	Illinois
Rosborough, D. Y.	Windsor	Alachua
Stewart, J. B.	Hilliard	Nassau
Taylor, W. H., Jr.	Greenwood	Jackson

COLLEGE OF AGRICULTURE

Seniors

Badger, D. M.	Minneapolis	Minnesota
Clayton, H. G.	Tampa	Hillsboro
Conant, H. G.	Minneapolis	Minnesota
Gist, J. F.	McIntosh	Marion
Grace, J. T.	Graceville	Jackson
Houghtaling, H. C.	New York	New York
Martini, C. A.	Van Wert	Ohio
McPherson, R. J.	Juniper	Gadsden
Miller, J. A.	Independence	Missouri
Shaw, A. G.	Ybor City	Hillsboro
Springer, J. R.	Pitman	New Jersey
Schulz, W. H., Jr.	Eau Claire	Wisconsin
Wilson, G. H.	Gainesville	Alachua

Juniors

Name	*Postoffice*	*State or County*
Hainlin, N. E.	Goulds	Dade
Halma, F.	Gainesville	Alachua
Harn, S. P.	Mooresville	Alabama
McDowall, C. D.	Gainesville	Alachua
Jackson, T. U.	Lakeland	Polk

Sophomores

Dukes, R. A.	Worthington	Bradford
Gleichman, M. I.	Largo	Pinellas
Grace, C. B.	Evinston	Alachua
Gunn, C. D.	Marianna	Jackson
Lord, H. N.	Ft. Pierce	St. Lucie
Nolan, F. E.	Lake Elmo	Minnesota
Pancoast, B. K.	Pitman	New Jersey
Weeden, F. R.	Tampa	Hillsboro

Freshmen

Armstrong, P. B.	Terra Ceia	Manatee
Beeler, D.	Rock Hill	So. Carolina
Briggs, W. R.	Zephyrhills	Pasco
Johnson, J. A.	St. Petersburg	Pinellas
Mann, C. M.	Fernandina	Nassau
Salvail, V. H.	Helena	Montana
Thompson, F. L.	Pensacola	Escambia

Special

Steil, F. H.	Sydney	Ohio

Middle Course

Bixbey, V. E.	Buffalo	New York
Jennings, B. A.	Cincinnatus	New York

Two-Year Course

Aber, H. W.	Eustis	Lake
Belzer, Theo.	Westville	Holmes
Bitterlich, J.	St. Louis	Missouri
Candler, W. A.	Clearwater	Pinellas
Dahm, O. B.	Haines City	Polk
Fielding, E.	Chicago	Illinois
Glegg, G. D.	Ruskin	Hillsboro
Hecker, F. J.	Century	Escambia
Kershaw, J. G.	Cocoa	Brevard
Lawless, J. L., Jr.	Ocklocknee	Leon
May, L. L. M.	Ocala	Marion
Meffert, F. G.	Quincy	Gadsden
Millidge, S.	Redland	Dade
Moore, J. E.	Haines City	Polk
McMullen, H. L.	Clearwater	Hillsboro
Nieland, C. J.	St. Johns Park	St. Johns
Nieland, E. R.	St. Johns Park	St. Johns
Nieland, F. C.	St. Johns Park	St. Johns
Owens, B. J.	Jacksonville	Duval
Webb, Q. C.	Cantonment	Escambia

One-Year Course

Name	*Postoffice*	*State or County*
Mathis, A.	Ponce de Leon	Holmes
Moss, E. R.	Espanola	St. Johns
McGarvey, F. C.	Lorain	Ohio
Oliphant, R. G.	Manatee	Manatee
Walker, G. J.	Gainesville	Alachua

Four-Week Course

Baker, Sydney F.	Lake Geneva	Clay
Bethea, G. W.	Athena	Taylor
Bonnett, Earl	Green Cove Springs	Clay
Cook, R. E. V.	Monticello	Jefferson
Hamilton, J. W.	Omaha	Nebraska
Hendry, V. W.	Perry	Taylor
Houck, L. D.	Fenholloway	Taylor
Houck, M.	Fenholloway	Taylor
Johnson, B. B.	Perry	Taylor
Kates, J. F.	Bonifay	Holmes
Lipscomb, B.	Fenholloway	Taylor
Rainy, J. S.	Mandarin	Duval

COLLEGE OF ENGINEERING

Seniors

Becker, N. A.	Jacksonville	Duval
Cappleman, H. L.	Ocala	Marion
Crom, G. C.	Gainesville	Alachua
Crom, W. H.	Gainesville	Alachua
DeWinkeler, A.	Arch Creek	Dade
Hill, F. W. L.	Narcossee	Osceola
LaRoche, C. C.	Cocoa	Brevard
McNeill, M. C.	Tallahassee	Leon
Parham, W. C.	Gainesville	Alachua
Price, J. C.	Warrenton	North Carolina
Riggins, L. W.	Lakeland	Polk
Swanson, F. M.	Gainesville	Alachua
Tenney, L. E.	Federal Point	Putnam
Thalimer, H. A.	DeFuniak Springs	Walton
White, D. L.	Citra	Marion

Juniors

Bailey, U. C.	Gainesville	Alachua
Blount, U. F.	Lakeland	Polk
Freeman, H. E.	Starke	Bradford
Hallowes, J. P.	Green Cove Springs	Clay
Hamilton, G. D.	Bartow	Polk
Joyner, R. L.	Roberts	Georgia
Ward, S. R.	Brooksville	Hernando
DesPland, L. A.	Daytona	Volusia

Sophomores

Davies, F. E.	West Palm Beach	Palm Beach
Hall, H. A.	Green Cove Springs	Clay
Holland, F. Leonard	Orlando	Orange

Name	*Postoffice*	*State or County*
Little, J. P.	Gainesville	Alachua
Moseley, G. R.	Gainesville	Alachua
Nelson, G. E.	Dunedin	Hillsboro
Peacock, A. J.	Bronson	Levy
Prescott, F. L	Starke	Bradford
Sikes, J. F.	Punta Gorda	DeSoto
Spencer, L. P.	Palm Beach	Palm Beach
Stephens, T. M.	Charlotte Harbor	DeSoto
Taylor, Paul C.	Miami	Dade
VanCamp, R. K.	Punta Gorda	DeSoto
Whitmire, W. A.	Milton	Santa Rosa

Freshmen

Armstrong, P. B.	Terra Ceia	Manatee
Braymer, C. J.	Bradentown	Manatee
Clarke, L.	East Palatka	Putnam
Coile, R. M.	Bowling Green	DeSoto
Farrior, J. R.	Chipley	Washington
Hilton, T. H.	Melrose	Alachua
Himes, B. T.	West Palm Beach	Palm Beach
Holland, F. Lassiter	Bartow	Polk
Merrin, R. G.	Plant City	Hillsboro
Ramsdell, A. W.	Tampa	Hillsboro
Rosenthal, J.	Tampa	Hillsboro
Sweet, C. W.	Leesburg	Lake
West, D. E.	Monticello	Jefferson

Special

Peter, B. K.	Washington	Dist. of Columbia

COLLEGE OF LAW

Seniors

Name	*Postoffice*	*State or County*
Alexander, L. W.	Jacksonville	Duval
Arnold, A. C.	Jacksonville	Duval
Baxter, M.	Blacksbear	Georgia
Blackman, W., A.B. (Rollins College)	Winter Park	Orange
Buie, A. P.	Bell	Alachua
Bullock, J. R.	Ocala	Marion
Carter, H. B.	St. Augustine	St. Johns
Futch, L. E.	St. Petersburg	Pinellas
Henderson, R. A.	Fort Myers	Lee
Hill, W. L.	Gainesville	Alachua
Jackson, G. W.	St. Augustine	St. Johns
Jacobson, J. E., B.S. (University of Florida)	Jacksonville	Duval
Knight, A. W., Jr., A.B. (University of the South)	Jacksonville	Duval
Lischkoff, L. N.	Pensacola	Escambia
Mobley, P. D.	Punta Gorda	DeSoto
Moore, T. W.	Jacksonville	Duval
McGarry, P. D.	Jacksonville	Duval
Owens, F. E.	Eustis	Lake

Name	*Postoffice*	*State or County*
Perry, P. R.	St. Augustine	St. Johns
Peterson, J. H.	Lakeland	Polk
Poppell, J. C.	Starke	Bradford
Pruitt, T. P.	Tallahassee	Leon
Ray, T. C.	Marianna	Jackson
Robbins, R. P.	Titusville	Brevard
Shackleford, R. W., A.B. (University of Florida)	Tallahassee	Leon
Smith, T. H.	Marianna	Jackson
Sutton, J. B.	Lakeland	Polk
Taylor, R. R., Jr.	Miami	Dade
Welch, C. L.	Tampa	Hillsboro
Wiggins, E. E.	Hawthorn	Alachua
Wiggins, C. M.	Bartow	Polk
Wilder, A. D.	Orange	Liberty

Juniors

Barker, W. J.	Jacksonville	Duval
Boyer, C. A.	Jacksonville	Duval
Bryant, T. W., B.S. (University of Florida)	Lakeland	Polk
Carter, F. B., Jr.	Pensacola	Escambia
Dawson, C. R.	Jacksonville	Duval
Davis, H. F.	St. Augustine	St. Johns
Edge, L. D.	Groveland	Lake
Goldberg, R. A.	Madison	Madison
Groover, J. M.	Lakeland	Polk
Hale, Hugh	Brooksville	Hernando
Houston, Pat	Jacksonville	Duval
Jarrell, R. L., A.B.. (University of Florida)	Starke	Bradford
Johnson, Lee, B.S. (Ntl. Greek Academy of Constantinople)	Constantinople	Turkey
Key, R. G.	St. Petersburg	Pinellas
Leitner, S., A.B. (University of Florida)	Kissimmee	Osceola
Lotspeich, A. A.	Weaverville	No. Carolina
Maguire, R. F.	Ocoee	Orange
Moffat, V. R.	Miami	Dade
Newman, L. B.	Jacksonville	Duval
Oliphant, H. K., Jr.	Bartow	Polk
Pacetti, T. A.	St. Augustine	St. Johns
Price, T. E.	Marianna	Jackson
Pyle, G. E.	Gainesville	Alachua
Rabinovic, A. M.	Tampa	Hillsboro
Rush, H. L.	Gainesville	Alachua
Sawyer, H. S., A.B. (Guilford College)	Merritt	No. Carolina
Slagle, Dean	Berea	Kentucky
Stevens, A. B.,	St. Petersburg	Pinellas
Stewart, J. B.	Hilliard	Nassau
Trammell, C. C.	Lakeland	Polk
Upchurch, F. D.	Jacksonville	Duval
White, R. R., A.B. (University of Florida)	Starke	Bradford

Name	*Postoffice*	*State or County*
Wilson, B. C.	Bartow	Polk
Wilson, M. R.	Palmetto	Manatee

Specials

Barrs, N.	Gainesville	Alachua
Johns, E. M.	Starke	Bradford
Knowles, G. B.	Greenwood	Jackson
Meredith, B. F.	Fort Myers	Lee
Shoemaker, J. E.	Gainesville	Alachua
Shuman, J. H.	Monticello	Jefferson
Soloman, B. L.	Marianna	Jackson
Slater, A. L., A. B. (Rollins' College)	St. Augustine	St. Johns
Thompson, Harry, B.S. (University of Florida)	Gainesville	Alachua
Waits, W. H.	Gainesville	Alachua
Williams, J. E.	Haskell	Polk

TEACHERS COLLEGE AND NORMAL SCHOOL

Seniors

Goulding, R. L.	Pensacola	Escambia

Juniors

Barber, B. D.	Tallahassee	Leon
DeWolf, H. L.	Cresent City	Putnam
Embry, W. E.	Dade City	Pasco
Knowles, G. B.	Greenwood	Jackson
Mason, Fred R.	Macclenny	Baker
Poppell, J. T.	New River	Bradford

Sophomores

Adams, B. D.	Gainesville	Alachua
Blackburn, L. L.	Gainesville	Alachua
Blood, Hattie	Mulberry	Polk
Bauskett, Sophie	Jacksonville	Duval
Boswell, Fannie	St. Petersburg	Pinellas
Bouknight, Olga K.	Micanopy	Alachua
Boulware, R. S.	Island Grove	Alachua
Bowman, Luella	Mulberry	Polk
Bowman, Louise	Mulberry	Polk
Brachhold, Margaret	Daytona Beach	Volusia
Brachhold, Elizabeth	Daytona Beach	Volusia
Bradford, Gladys	Dade City	Pasco
Brice, V. R.	Island Grove	Alachua
Bryant, Eva	Lakeland	Polk
Brown, Lynette	Miami	Dade
Caldwell, Hattie	Dade City	Pasco
Churchill, Frank	Webster	Sumter
Clayton, Susie	McClenny	Baker
Colclough, Lillian	Gainesville	Alachua
Collins, J. W.	Ft. White	Columbia
Collins, Mrs. J. W.	Ft. White	Columbia
Combs, A. W.	Alva	Lee
Corey, Lorraine	Fellsmere	St. Lucie
Corr, Alys	Dade City	Pasco

Name	*Postoffice*	*State or County*
Cox, C. S.	Mulberry	Polk
Glidewell, J. H.	Tampa	Hillsboro
Hollingsworth, C. I.	Lakeland	Polk
McCall, T. E.	Jasper	Hamilton
Wilson, W. D.	Westville	Holmes

Freshmen

Browning, J.	Francis	Putnam
Green, R. A.	New River	Bradford
Hutchinson, A. K.	Palatka	Putnam

Irregular

Crofton, L. C.	Vernon	Washington
Hartsfield, J. E.	Gainesville	Alachua
Miles, F. D.	Vernon	Washington
Rosborough, D. Y.	Windsor	Alachua

NORMAL SCHOOL

Barber, R. T.	Morristown	Levy
Durrance, F. Y.	Arcadia	DeSoto
Cogburn, P. H.	Cottondale	Jackson
Echols, H.	Jay	Santa Rosa
Green, C. D.	McAlpin	Suwannee
Haltiwanger, R. N.	Gainesville	Alachua
Hatcher, F.	Frisco	Oklahoma
Johns, H. L.	Lakeland	Polk
Lipsey, J. J.	Trilby	Pasco
McAlpin, I. M.	Mayo	Lafayette
Neal, C. R.	Gainesville	Alachua
Roberts, W. L.	Live Oak	Suwannee
Robinson, T. R., Jr.	Milton	Santa Rosa
Long, W. C.	Mayo	Lafayette
Turner, E. P.	Trenton	Alachua

Spring Review Course

Carter, W. L.	Waukeenah	Jefferson
Colson, A. L.	Bell	Alachua
Duggar, J. D.	Glen St. Mary	Baker
Sowell, C.	West Lake	Hamilton
Walker, Chris.	Glen St. Mary	Baker

UNIVERSITY SUMMER SCHOOL (Co-Educational)

(1913)

Anderson, Hildur	Miami	Dade
Baker, Sadie	Key West	Monroe
Baldwin, Florence	Archer	Alachua
Barry, Gallie	Bronson	Levy
Baskin, J. H.	Gainesville	Alachua
Belcher, Francis	Largo	Pinellas
Bennett, Pearl	DeLand	Volusia
Bessent, Fay	Starke	Bradford
Biaza, Isabel	Key West	Monroe
Bishop, Millicent	Gainesville	Alachua
Blake, Anna May	Tampa	Hillsboro

Name	*Postoffice*	*State or County*
Dampier, Johnnie	Hague	Alachua
Darby, Emma	Starke	Bradford
Davis, E. M.	Starke	Bradford
Davis, Grace	Newberry	Alachua
Dawkins, Mary	Gainesville	Alachua
Dean, Carrie	Gainesville	Alachua
Dorsey, Annie	Gainesville	Alachua
Draper, S. A.	Lake Butler	Bradford
Dudley, Edna	Newberry	Alachua
Edmunds, Nellie	St. Augustine	St. Johns
Emerson, Grace	Apopka	Seminole
Ferson, Mrs. B. M.	Eden	St. Lucie
Foland, Ida	Levon	Marion
Forbes, Mary	Anthony	Marion
Gatchell, Pauline	St. Augustine	St. Johns
Gautt, Mrs. Beatrice	Trenton	Alachua
Gill, James	Anthony	Marion
Gill, Ruth	Anthony	Marion
Gracey, Gladys	Gainesville	Alachua
Hall, Emma V.	Fellsmere	St. Lucie
Harrison, Edythe	Gainesville	Alachua
Hart, Mary	Gainesville	Alachua
Hayes, J.	Webster	Sumter
Hayes, M. S.	Brooker	Bradford
Hepburn, Lucy	Jupiter	Palm Beach
Highsmith, Geneva	Arcadia	DeSoto
Holder, A. E.	Alachua	Alachua
Hudgins, Rebecca	Hawthorne	Alachua
Jordan, Miss	Davenport	Polk
Kilgore, Rosa	Largo	Pinellas
Kohten, Regina	Tillman	Brevard
Kohten, Elizabeth	Tillman	Brevard
Lambert, Clarence	Island Grove	Alachua
Lambert, Pauline	Sparr	Marion
Landrum, C. A.	Newberry	Alachua
Lee, Belle	Gainesville	Alachua
Lee, Winnifred	Gainesville	Alachua
Long, C. W.	Mayo	Lafayette
Lord, Ada Spero	Key West	Monroe
Lowe, Hilda	Key West	Monroe
Lynch, W. H.	Gainesville	Alachua
Maines, Mrs. O. M.	Orlando	Orange
Martin, Bernice	Island Grove	Alachua
May, Hannah	St. Petersburg	Pinellas
McCall, A. C.	Gainesville	Alachua
McClinton, Annie	Ft. White	Columbia
McRae, Alice	Evinston	Marion
McRae, Mary	Lakeland	Polk
Mercer, S. P.	Zolfo	DeSoto
Mercer, Mrs. S. P.	Zolfo	DeSoto
Mixson, H. J.	Williston	Levy
Murphree, Alberta	Gainesville	Alachua
Newman, Madge	Lakeland	Polk
Nichols, Annie May	Pedro	Marion
Pedrick, Douglas	Gainesville	Alachua
Perez, Dora	Key West	Monroe

Name	*Postoffice*	*State or County*
Perry, Irene	Gainesville	Alachua
Peters, Georgia	Plant City	Hillsboro
Phifer, Helen	Gainesville	Alachua
Pickren, Mrs. J. J.	Palatka	Putnam
Pledger, Edith	Manatee	Manatee
Plumb, Kathleen	Belle Air	Pinellas
Pratt, Nettie	Manatee	Manatee
Prevatt, Bernice	Gainesville	Alachua
Proctor, Jewell	Pedro	Marion
Register, Lee	Plant City	Hillsboro
Reid, Lillian	Newberry	Alachua
Reinoehl, Sophie	Jacksonville	Duval
Ricks, Ruby	Gainesville	Alachua
Roberts, A. K.	Wellborn	Suwannee
Roberts, Clarise	Key West	Monroe
Roberts, Grace	Key West	Monroe
Roberts, J. P.	Wellborn	Suwannee
Roberts, Julia	Key West	Monroe
Roberts, Walter	Wellborn	Suwannee
Russell, M. E.	Key West	Monroe
Russell, Medora	Kissimmee	Osceola
Salter, Kathleen	Brooksville	Hernando
Seacole, Mabel	Eustis	Lake
Sealey, R. M.	Ft. Myers	Lee
Seymour, Alta	Summerfield	Marion
Shaw, R. C.	Island Grove	Alachua
Simmons, E. R.	Gainesville	Alachua
Smith, S. A.	Mulberry	Polk
Solomon, Louise	Key West	Monroe
Sparkman, John	Webster	Sumter
Stevens, W. H.	Dade City	Pasco
Stewart, Clara	Eau Gallie	Brevard
Stewart, Gertrude	Eau Gallie	Brevard
Strickland, Alice	Waldo	Alachua
Sumner, Glenn	St. Petersburg	Pinellas
Syfrett, J. M.	Gainesville	Alachua
Taylor, Mayme	Oak Hill	Brevard
Thomas, Clara	Gainesville	Alachua
Tomkies, Kate	Gainesville	Alachua
Torano, Emma	Key West	Monroe
Touchstone, Beulah	Homeland	Polk
Treadwell, Annie	Gainesville	Alachua
Turner, Mabel	Auburndale	Polk
Watson, T. L.	Ft. Meade	Polk
Wells, Orian	Gainesville	Alachua
Wells, Ellen	Cocoa	Brevard
White, Florrie	Hague	Alachua
Williams, G. H.	Waldo	Alachua
Woolf, Madula	Arcadia	DeSoto
Zellner, E. A.	Floral City	Citrus

PRACTICE HIGH SCHOOL

Fourth Year

Baskin, J. H.	Gainesville	Alachua
Battle, F. S.	Sorrento	Lake

Name	*Postoffice*	*State or County*
Brannon, C. S.	Ocoee	Orange
Freeman, E. W.	Starke	Bradford
Glazier, G. M.	Oneco	Manatee
Hill, J. R.	Coleman	Sumter
Johnson, C. L.	Coleman	Sumter
Lee, R. E.	Gainesvillle	Alachua
Levis, N. K.	St. Petersburg	Pinellas
Liddon, C. C.	Marianna	Jackson
Long, C. W.	Mayo	Lafayette
Lowe, P. R.	Anona	Hillsboro
Marshburn, F. B.	Bronson	Levy
McAlpin, I. M.	Mayo	Lafayette
McMullen, P. R.	Largo	Pinellas
Patterson, J. B.	Chaires	Leon
Stillson, G. A.	St. Petersburg	Pinellas
Willis, E. M.	Williston	Levy
Wood, H. M.	Evinston	Alachua
Wyckoff, J. S., Jr.	Citra	Marion
Zetrouer, H. F.	Rochelle	Alachua

Third Year

Bean, C. S.	Bronson	Levy
Cannon, E. F.	Gainesville	Alachua
Carleton, W. J.	Kings Ferry	Nassau
Clyatt, G. C.	Micanopy	Alachua
Duncan, W. S.	Tavares	Lake
Frisbee, L. R.	Middleburg	Clay
Futch, E. C.	Dade City	Pasco
Gist, J. V.	Goulds	Dade
Graham, G. R.	Fort White	Columbia
Graham, R. D.	Piedmont	West Virginia
Gray, L. A.	Hinson	Gadsden
Harvey, P. J.	Williston	Levy
Hatchedorian, Dicran	Constantinople	Turkey
Hodgson, A. M.	Eau Gallie	Brevard
Johnson, B. B.	Genoa	Hamilton
Jordan, W. H.	Jacksonville	Duval
Knights, K. K.	Dupont	St. Johns
Lea, B. E.	St. Augustine	St. Johns
Lockey, A. H.	Esto	Holmes
Lowe, V. E.	Anona	Hillsboro
Lynch, W. H.	Gainesville	Alachua
Means, H. G.	Fort White	Columbia
Merren, F. G.	Plant City	Hillsboro
McElya, Will	Gainesville	Alachua
McIntosh, A. P.	Brooksville	Hernando
Feacock, Drew	Altha	Calhoun
Pedrick, D.	Gasparilla	DeSoto
Redstone, H. G.	Eau Gallie	Brevard
Register, I. L.	Plant City	Hillsboro
Stoutamire, R.	Tallahassee	Leon
Surrency, J. K.	Bowling Green	DeSoto
Toomer, W. H., Jr.	Jacksonville	Duval
Turner, G. F.	Gaiter	Marion

SUMMARY

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College of Agriculture		
a. College	34	
b. Middle Course	2	
c. Two-Year Course	20	
d. One Year Special Course	5	
e. Four-Weeks Course for Farmers	12	
		73
College of Engineering		51
College of Law		77
Teachers College and Normal School		
a. College	20	
b. Normal School	15	
c. Spring Review Course	5	
d. Summer School	140	
e. Practice High School	54	
		230
Total Enrolment for 1913-14		501
Counted twice		12
Net total		489

SUMMARY BY STATES AND FOREIGN COUNTRIES

Alabama	1
Colorado	1
District of Columbia	1
Florida	447
Georgia	3
Holland	1
Illinois	2
Kentucky	1
Maryland	1
Massachusetts	1
Michigan	1
Minnesota	3
Montana	1
Missouri	2
Nebraska	1
New Jersey	2
New York	3
North Carolina	4
Ohio	4
Oklahoma	1
Pennsylvania	2
South Carolina	2
Turkey	2
West Virginia	1
Wisconsin	1
Net Total	489

SUMMARY BY COUNTIES

Alachua	92
Baker	4
Bradford	18
Brevard	11
Calhoun	2
Citrus	1
Clay	6
Columbia	5
Dade	10
DeSoto	13
Duval	21
Escambia	6
Gadsden	4
Hamilton	3
Hernando	4
Hillsboro	26
Holmes	5
Jackson	11
Jefferson	5
Lafayette	5
Lake	8
Lee	4
Leon	12
Levy	7
Liberty	1
Madison	1
Manatee	8
Marion	17
Monroe	11
Nassau	4
Orange	5
Osceola	3
Palm Beach	6
Pasco	8
Pinellas	16
Polk	40
Putnam	6
St. Johns	14
St. Lucie	4
Santa Rosa	3
Seminole	2
Sumter	5
Suwannee	5
Taylor	6
Volusia	6
Walton	1
Washington	4
Total from forty-seven Florida Counties	459
Other States and Foreign Countries	42
Total	501
Counted twice	12
Net total	489

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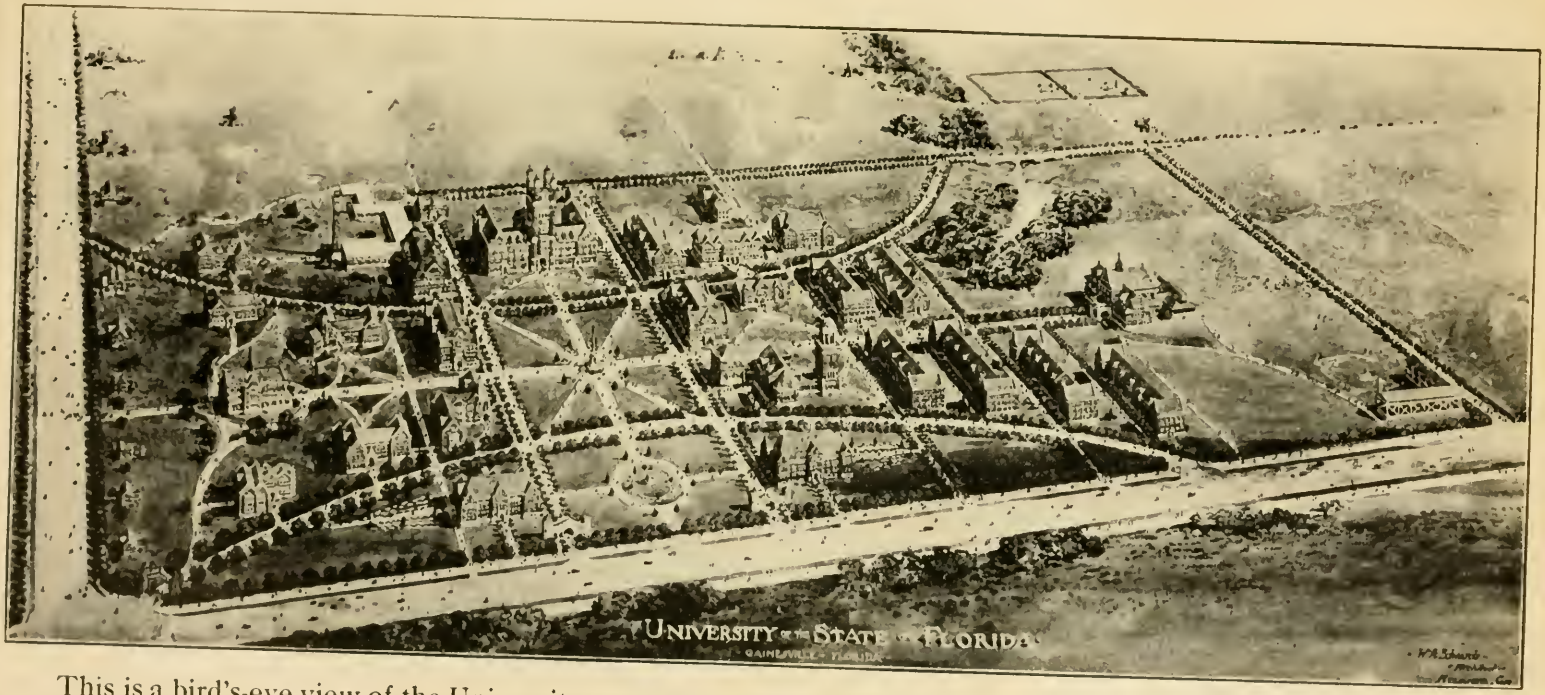
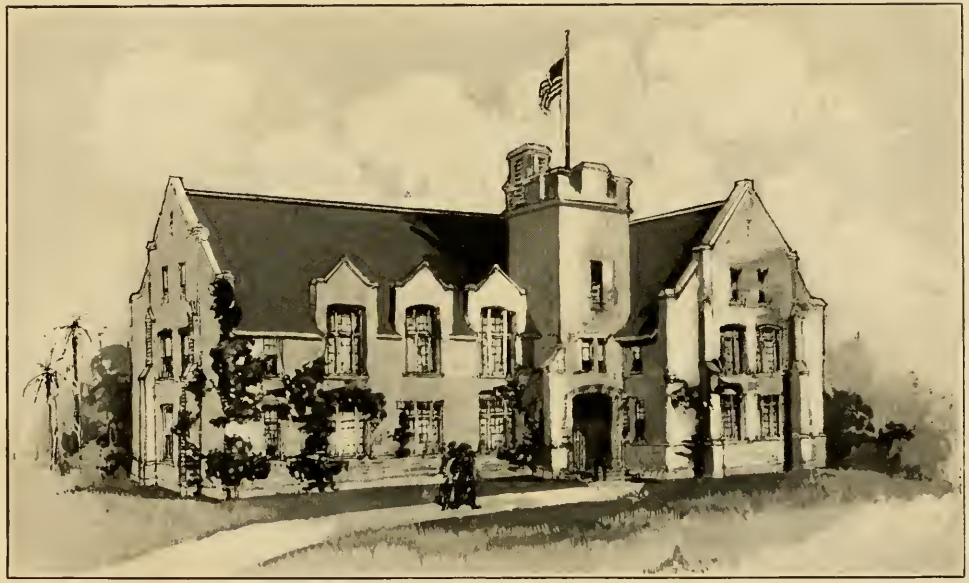


This is a bird's-eye view of the University campus as it is being developed. Already more than six hundred thousand dollars have been expended on permanent improvements here, and other buildings are going up as fast as needed and funds permit.



College of Law

Vol 9 August, 1914 No. 3.

University of Florida
Gainesville

Sixth Annual Announcement

OF THE

College of Law

1914-1915

UNIVERSITY OF FLORIDA

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THE ASSOCIATION OF COLLEGES AND SECONDARY SCHOOLS OF THE SOUTHERN STATES.

THE AMERICAN ASSOCIATION OF AGRICULTURAL COLLEGES AND EXPERIMENT STATIONS.

THE SOUTHERN INTERCOLLEGIATE ATHLETIC ASSOCIATION.

THE LAND-GRANT COLLEGE ENGINEERING ASSOCIATION.

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UNIVERSITY OF FLORIDA

LOCATION

The University of Florida is located at Gainesville, a city of more than ten thousand inhabitants, in a region noted for its beauty and healthfulness and for its agricultural resources.

The advantages that Gainesville presents as the seat of the University are numerous. It is centrally located and easy of access, being reached by the leading railroads of the State. It has well paved, lighted, and shaded streets, an exceptionally pure water supply, and a good sewerage system. The citizens are energetic, progressive, and hospitable. The moral atmosphere is wholesome, and for years the sale of intoxicants has been prohibited by law. The leading religious denominations have attractive places of worship.

The city offers special advantages as the home of a law school, in that within its borders are found county, circuit and United States courts.

GROUNDS AND BUILDINGS

The University occupies a tract of six hundred and four acres, situated in the western extremity of Gainesville. Ninety acres of this tract are devoted to the campus, drill-ground, and athletic fields; one hundred and thirty-five acres are utilized for the farm of the College of Agriculture; the remainder is used by the Agricultural Experiment Station.

The University is one of the few institutions in the United States that made plans before laying the foundations of a single building for all future development of the campus, as far as this could be foreseen. Consequently the campus presents an harmonious appearance. The liberality of the State has permitted the erection of buildings as fast as they were needed. Twelve have already been constructed, all of which are lighted with electricity, supplied with city water, and furnished with modern improvements.

UNIVERSITY OF FLORIDA

GAINESVILLE

ORGANIZATION

I. THE GRADUATE SCHOOL.

II. THE COLLEGE OF ARTS AND SCIENCES:
- (a) A Curriculum leading to the A.B. degree.
- (b) A Curriculum leading to the B.S. degree.

III. THE COLLEGE OF AGRICULTURE:
A Curriculum leading to the degree of B.S. in Agriculture.

IV. THE COLLEGE OF ENGINEERING:
- (a) A Curriculum leading to the B.S. degree in Civil Engineering.
- (b) A Curriculum leading to the B.S. degree in Electrical Engineering.
- (c) A Curriculum leading to the B.S. degree in Mechanical Engineering.

V. THE COLLEGE OF LAW:
A Curriculum leading to the degree of LL.B.

VI. THE TEACHERS COLLEGE AND NORMAL SCHOOL:
- (a) A Curriculum leading to the A.B. degree in Education.
- (b) A Curriculum leading to the B.S. degree in Education.
- (c) A Normal Course leading to a Diploma.
- (d) The University Summer School.

VII. THE DIVISION OF UNIVERSITY EXTENSION:
- (a) Institutes.
- (b) Farmers' Co-operative Demonstration Work.
- (c) Boys' and Girls' Clubs.
- (d) Correspondence Courses.

VIII. THE AGRICULTURAL EXPERIMENT STATION.

IX. STATE NURSERY STOCK INSPECTION.

For catalogue address A. A. MURPHREE, President.

UNIVERSITY CALENDAR
1914-1915

1914—June 15, *Monday*	Summer School begins.
August 7, *Friday*	Summer School ends.
September 22, *Tuesday*	Summer Recess ends. Examinations for admission. Registration of Students.
September 23, *Wednesday*	First Semester begins.
October 3, *Saturday, 1:30 p. m.*	Re-examinations.
October 3, *Saturday, 2:30 p. m.*	Meeting of General Faculty.
November 16, *Monday*	Farmers' Short Course begins.
November 26, *Thursday*	Thanksgiving Holiday.
December 12, *Saturday*	Farmers' Short Course ends.
December 14, *Monday*	Boys' Corn Club Course begins.
December 19, *Saturday, 11:30 a. m.*	Christmas Recess begins.
1915—January 4, *Monday*	Christmas Recess ends.
January 12, *Tuesday*	Ten Day Course for Farmers begins.
February 2, *Tuesday*	First Semester ends.
February 3, *Wednesday*	Second Semester begins.
February 13, *Saturday, 2:30 p. m.*	Meeting of General Faculty.
March 6, *Saturday, 1:30 p. m.*	Re-examinations.
March 8, *Monday*	Review Course for Teachers begins.
June 5, *Saturday, 2:30 p. m.*	Meeting of General Faculty.
June 6 to 8	Commencement.
June 6, *Sunday*	Baccalaureate Sermon.
June 7, *Monday*	Oratorical Contests.
June 8, *Tuesday*	Graduating Day.
June 9, *Wednesday*	Summer Recess begins.
June 11, *Friday*	Examinations for Admission.
June 14, *Monday*	Summer School begins.
August 6, *Friday*	Summer School ends.
September 21, *Tuesday*	Summer Recess ends.

1914 CALENDAR 1915

January

S	M	T	W	T	F	S
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February

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March

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April

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May

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June

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July

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August

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September

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October

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November

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December

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January

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February

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21	22	23	24	25	26	27
28	..	..	..	..	..	..
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March

S	M	T	W	T	F	S
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21	22	23	24	25	26	27
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April

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May

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30	31	..	..	..	..	..

June

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December

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COLLEGE OF LAW

FACULTY

ALBERT A. MURPHREE, A.M., LL.D.,
President of the University.

THOS. W. HUGHES, LL.M.,
Dean and Professor of Law.

HARRY R. TRUSLER, A.M., LL.B.,
Professor of Law.

CLIFFORD W. CRANDALL, B.S., LL.B.,
Professor of Law.

SPECIAL LECTURERS FOR 1913-14

CHIEF JUSTICE THOS. M. SHACKLEFORD, LL.D.,
JUSTICE JAMES B. WHITFIELD,
JUSTICE R. F. TAYLOR,
JUSTICE W. A. HOCKER,
JUSTICE R. S. COCKRELL,
All of the Supreme Court of Florida.

HON. W. B. SHEPPARD,
U. S. Dist. Judge.

HON. J. T. WILLS,
Circuit Court Judge.

HON. FRED C. CUBBERLY,
Ex-U. S. District Attorney.

HON. THOS. W. FIELDING,
Referee in Bankruptcy.

HON. ROBT. E. DAVIS,
City Attorney, Gainesville.

PROF. HARVEY W. COX, Ph.D.,
University of Florida.

ACKNOWLEDGMENTS

The College of Law takes this opportunity of recording its appreciation of the services of the Justices of the Supreme Court of Florida and other leading members of the bench and bar of the State, who have from time to time delivered special lectures before the students and faculty. These lectures have been very instructive and helpful. Both faculty and students feel exceedingly grateful to all the members of the Supreme Court and the other gentlemen who lectured during the session recently closed for the kindly interest they manifested in the College of Law and for the resulting uplift and inspiration.

A similar course of lectures is being arranged for next year.

GENERAL STATEMENT

In 1891, the American Bar Association declared that in its opinion it was a part of the highest duty and interest of every civilized state to make provision, when necessary, for maintaining schools of law and for the thorough legal education of all who are licensed to practice law. Feeling with its full force the soundness of this doctrine and desiring to discharge this duty on the part of the State, the State Board of Education and the Board of Control provided for the opening of the College of Law in the University of Florida in September, 1909. The advantages to accrue to the State from having as a part of its educational system a thorough and systematic course of instruction in the common law, with special consideration of the peculiarities and exceptions applicable in Florida, are many and evident.

It was the purpose of the Board of Control to establish a law school which, by the quality of its work and the character of its equipment, would merit and command the confidence and support of the bench and bar of the State and would draw within its walls the young men who will constitute the future bar of Florida. That the hopes of accomplishing these results were well founded and that gratifying progress towards these ends has been made, are shown by the

number and character of those who have availed themselves of the advantages offered by the College of Law.

GROWTH

The college has had a rapid growth during the five years of its existence, and the outlook for the future is exceedingly bright. The total enrollment of last year was fifty-three, while that of this year is seventy-seven—an increase of more than forty-five per cent. Moreover, the general quality of the students in attendance, owing to the additional year of high school work required for matriculation, is considerably better than during preceding years.

LAW BUILDING

The College of Law is housed in a spacious building devoted exclusively to its use. Originally the college occupied quarters in Thomas Hall. In 1913 it was assigned a section of the History and Language Building. This also proving inadequate to the increasing needs of the college, the contract for the present College of Law Building was awarded February 9th, 1914. Its style of architecture is the Tudor-Gothic, harmonizing with the other buildings of the University. The building is one hundred seventy-two feet long, seventy feet wide, and two and one-half stories high. It contains a large, well-lighted library, furnished with book stacks, library tables, librarian's office, and consultation rooms for students and faculty. It has three commodious lecture-rooms, together with the offices of administration and the offices of the several resident professors. It contains, also, an elegant moot court room and auditorium handsomely finished in panel work. The court room has all the usual accessories, jury box, witness stand, jury room, and a circular stairway connecting it with the library below. Every interest of the college has been provided for, including attractive quarters for the John Marshall Debating Society. The building is steam heated, lighted by electricity, and equipped throughout with a superior grade of furniture; and it furnishes the College of Law with separate accommo-

dations as comfortable and convenient as can be found in the country.

LAW LIBRARY

Law books are the working tools of the practicing lawyer. To teach the student how to use these tools, how to use the digests, encyclopedias, and reports, is as much the work of the law school as to teach him the general principles of the law.

The College of Law was fortunate in being able to open its doors with a good working library and now has on its shelves the following books: Three sets of the Florida Supreme Court Reports, with digest; the Session Laws of Florida from 1822 to 1913, except from 1828 to 1834; McClellan's Digest and Duval's Compilation of the Laws of Florida; Revised Statutes of 1892 and the General Statutes of 1906; the Northwestern, Southwestern, Northeastern, Southeastern, Atlantic, Pacific, and Southern Reporters; the American Decisions, American Reports and American State Reports, with digests; the Lawyers' Reports Annotated, with digests; the United States Supreme Court Reports, with digests; the New York Common Law and Chancery Reports, with digests; the New York Court of Appeals Reports, the Reports of the Supreme Courts of Michigan and Massachusetts and the New Jersey Equity Reports to the Reporters; the Reprint of the English Reports, the Encyclopedia of Law and Procedure, and more than two hundred of the leading text-books and books of reference. The Legislature of 1911 appropriated one thousand dollars for the purchase of new books, and recently this money was expended in buying the Alabama State Reports, the Illinois State Reports, the New Jersey Law State Reports, the Decennial, and many text-books.

ADMISSION

Terms.—A candidate for admission must present, along with his scholastic record, a certificate of good moral character; and if he be from another college or university, the

certificate must show that he was honorably discharged. No candidate under 19 years of age will be admitted.

METHODS.—There are two methods of gaining admission to the University.

(1) *By Certificate.*—The University will accept certificates from the approved senior high schools of Florida; from accredited academies and preparatory schools of the State; from any secondary school of another State which is accredited by its State university; and from any recognized college or university. These certificates must be filed in the registrar's office.

The certificate presented by the candidate for admission must be officially signed by the principal of the school attended. It must state in detail the work of preparation, and, in the case of Florida high schools, that the course *through the twelfth grade* has been satisfactorily completed.

Blank certificates, conveniently arranged for the desired data, will be sent to all high school principals and, upon application, to prospective students.

(2) *By Examination.*—Candidates not admitted by certificate will be required to stand written examinations upon the entrance subjects. For dates of these examinations, see University Calendar.

REQUIREMENTS.—"*Entrance Units.*"—The requirements for admission are measured in "Entrance Units," based upon the curriculum of the high schools of Florida. A unit represents a course of study pursued throughout the school year with five recitation periods of at least forty-five minutes each per week, four courses being taken during each of the four years. Thus the curriculum of the standard senior high school of Florida is equivalent to sixteen units. Two laboratory periods should be counted as one recitation period.

Number of Units.—Applicants for admission as regular students and candidates for a degree must acquire credit for sixteen such entrance units.

These requirements are at the very least equal to fourteen and one-half units as defined by the Carnegie Foundation or the National Educational Association.

Distribution of Units.—Of the *sixteen* units required for admission, *eight* are specified and *eight* are elective.

SPECIFIED SUBJECTS

English	3 units
Mathematics	3 units
History	1 unit
Science	1 unit

Elective Units.—The elective units may be chosen from the list of elective subjects given below and from such other subjects as are regularly taught in a standard high school. It is provided, however, that not more than four of these units may be accepted in vocational subjects, such as typewriting, stenography, mechanic arts, agriculture, etc.

ELECTIVE SUBJECTS

Agriculture	1 unit
Botany	½ or 1 unit
Chemistry	1 unit
English	1 unit
Latin	4 units
History	2 units
Mathematics	1 unit
Modern Languages—French, German, or Spanish	2 units
Physical Geography	1 unit
Physics	1 unit
Zoology	½ or 1 unit

Deficiencies.—A deficiency of two units will be allowed a candidate, but such deficiencies must be removed by the end of the first year of admission.

ADVANCED STANDING

Attorneys at law who have been admitted to practice in the courts of this State and who comply with the above entrance requirements will be admitted to the senior class without examination.

No work in law done in other institutions will be accepted towards a degree, unless the applicant passes satisfactorily the examinations held in the subjects in the junior year of this College, or unless, by special vote of the faculty, credit is given towards senior standing without examination for

such work. In no case will credit be given for work not done in residence at an approved law school.

SPECIAL STUDENTS

Persons over twenty-one years of age who are not able to qualify as regular students may be admitted as special students upon presenting satisfactory evidence that they have received such training as will enable them to make profitable use of the opportunities offered in the College of Law. If the entrance conditions are removed not later than the opening of the first semester of the senior year, such students may become regular students and candidates for a degree.

UNIVERSITY PRIVILEGES

The advantages of the other colleges of the University are open to such students in the College of Law as desire and are able to accept them. Courses in constitutional and political history, international law, political economy, logic, rhetoric and English composition are particularly recommended to law students. No extra charge will be made for such courses, but students in the College of Law will be permitted to take them only with the consent of the law faculty and of the professors concerned.

STATEMENT OF EXPENSES

UNIVERSITY CHARGES.—*Tuition.*—In the College of Law a tuition fee of twenty dollars ($20.00) per semester, payable in advance, is charged all students.

Registration Fee.—A registration fee of five dollars ($5.00) per year is charged all students.

An additional fee of two dollars ($2.00) is required of students who enter after the day scheduled for registration.

Damage Deposit.—In order to secure the University against damage, the sum of five dollars ($5.00) must be deposited at registration. Damage known to have been done by any student will be charged to his individual account; other damages will be prorated among the students.

At the end of the scholastic year this deposit, less the amount deducted, will be returned to the student. No orders for the disbursement of sums remaining to the credit of individual students will be recognized by the auditor until after the close of the second semester.

Infirmary Fee.—An infirmary fee of three dollars ($3.00) is charged each student, the proceeds of which go towards defraying the salary of a resident nurse. This secures for the student, in case of illness, the privilege of a bed in the infirmary (which occupies Section A of Thomas Hall), the services of the nurse, and attention from the University physician, E. R. Flint, M.D. (Harvard).

Board and Lodging.—Board and lodging will be furnished by the University at a cost of sixty dollars ($60.00) for the first semester, not including the Christmas vacation, and sixty-four and a half dollars ($64.50) for the second semester. These sums must be paid at the beginning of each semester. Under no circumstances, except on account of sickness, will any part of these charges be refunded because of absence for a period of less than one month; and in case a student is dismissed from the University, no part will be refunded. In very exceptional cases, arrangements may be made to pay as follows: Twenty dollars on September 22, October 31, and on December 7; $24.50 on January 29; and $20.00 on March 14 and on April 14. Under *Board and Lodging* are included meals in the dining-hall and room (with heat, light and access to a bathroom), furnished as stated below. The doors of the rooms are provided with Yale locks. A deposit of 25 cents is required for each key, which will be returned when the key is surrendered.

Lodging without Board.—Students occupying a room in the dormitories, but not taking meals in the dining-hall, will be charged $5.00 per month for lodging.

Board without Lodging.—Board without lodging will be furnished at the rate of $13.50 per calendar month, payable in advance. No part of this sum will be refunded.

Furniture.—All rooms are partially furnished. The furniture consists of two iron bedsteads and mattresses, chif-

fonier or bureau, table, washstand, and chairs. The students are required to provide all other articles, including pillows, bedding, wash-bowl, pitcher, mirror, half-curtains, mosquito-bar, etc.

Summary of Expenses.—The actual University charges to a law student (including board and lodging, fees, and tuition, but not including books or damage deposit) are $172.50.

REMITTANCES.—*All remittances should be made to the Auditor, The University of Florida, Gainesville, Fla.*

TEXT-BOOKS

The text-books used will, in most cases, be found in the law library, but it will be necessary for students to provide themselves with books for their daily use. Nearly all of the books are standard texts and will form a nucleus of the student's future library.

MARSHALL DEBATING SOCIETY

It is important that those who study law and intend to engage in its practice should give attention to the subject of public speaking. To suppose that excellence in public speaking and debating is a gift of nature only and not the result of patient and persistent effort, is a mistake. Believing in the truth of these statements, the students in the College of Law met early the first year and organized a society that would secure to its members practice in debating and public speaking and experience in arguing legal questions, as well as drill in parliamentary law. The society was fittingly named "The Marshall Debating Society," in honor of the memory of the distinguished Southern jurist, John Marshall. The membership and work in the society are limited to students in the College of Law, but the faculty give all possible assistance and encouragement.

EXAMINATIONS

The last week of each semester is devoted to examinations covering the work of the semester. These examinations are in writing and are rigid and searching, but ARE

NOT NECESSARILY FINAL. To be considered, prima facie, to have satisfactorily completed a subject, the student must obtain a grade of at least 75 per cent.

PHI KAPPA PHI

A chapter of the Phi Kappa Phi Honor Fraternity was established at the University during the spring of 1912. This society has for its main aim the encouragement of scholarship and of high ideals. To be eligible for membership a law student must have been in attendance for at least three semesters, have been guilty of no serious breaches of good conduct, and have finished three-fourths of the regular course of study. The number that can be elected to membership is limited to the highest ranking third of the combined senior classes of the University.

MEDALS

Medals are offered (1) to the member of the junior class of any college of the University and (2) to the member of the senior class of any college of the University delivering the best original oration at commencement. The speakers are limited to four from each class and are selected by the faculty.

CALLAHAN AND COMPANY PRIZE

Through the liberality of Callahan and Company, of Chicago, a copy of the Cyclopedic Dictionary is offered annually to the senior law student whose average grade for both years of the course is highest.

DEGREE

The degree of Bachelor of Laws (LL.B.) is conferred upon those students who satisfactorily complete the courses of study. Students admitted to advanced standing may, if they do satisfactorily the work prescribed, receive the degree after one year's residence, but in no case will the degree be granted unless the candidate is in actual residence during all of the second year.

ADMISSION TO THE BAR

The graduates of the College of Law are licensed by the Supreme Court, without examination, to practice in all the courts of Florida upon presenting their diplomas, duly issued by the proper authorities, and upon furnishing satisfactory evidence that they are twenty-one years of age and of good moral character.

COURSE OF INSTRUCTION

The course of instruction in the College of Law extends through two years of thirty-five weeks each, exclusive of vacations; within the next two years it probably will be lengthened to three years. The academic year is divided into two semesters, the first having eighteen weeks and the second seventeen.

The purpose of the College is to educate its students by the study of jurisprudence and to acquaint them with the foundation principles of the common law. The ability to think clearly, to reason closely, to appreciate distinctions quickly, to investigate thoroughly, to generalize accurately, and to state his conclusions tersely, are prime requisites of the safe counselor. To secure for the student this power is the constant effort of both student and faculty.

The method of instruction has been planned with this end in view. Use is made both of text-books and of selected cases. Each case is carefully studied by the student, and in the classroom he is required to analyze it, giving in his own language a clear and concise statement of the essential facts, the issues involved in the case, the law governing it, and the reasoning of the court for the conclusion reached. This practice tends to greater thoroughness in reading, greater care in reasoning, and greater accuracy on the part of the student in the art of expression.

In connection with this case work, the student studies a well written text-book on the subject under consideration. This gives him a systematic summary of the same, more detailed information concerning the application of the law in particular instances, and an outline of the exceptions to

and limitations upon the general principles considered in the cases.

Particular stress is placed on the statutory modifications of the common law in Florida. This is true in every subject in the curriculum; but it is especially emphasized in pleading, practice and evidence, as the course of study is designed to instruct the student thoroughly in the peculiarities of substantive law and procedure in Florida, so that he will be able to enter upon the practice understandingly at once.

THE UNIVERSITY PRACTICE COURTS.—Thoroughly organized practice courts are regular features of the course of instruction in the second year. Weekly sessions of the courts are held, over which judges of the practice courts preside. The object of the course in the practice courts is to give the student practical instruction in pleading and practice at law and in equity and experience in the preparation and trial of cases. The work is arranged as follows:

First.—Cases arising upon prepared statements of fact are assigned to the second-year students, upon which they are to determine what proceedings to bring and how to bring them, issue, serve, and return process, prepare the pleadings and bring the case to an issue on a question of law. Each student must take part in at least one case at law and one in equity. The case is first heard on the sufficiency of the form and the structure of the pleadings and, when these are approved, the issue of law is argued and decided, the students acting as attorneys on each side drawing the order, judgment or decree they deem themselves entitled to.

Second.—In the second class of cases in the practice courts actual controversies are arranged and assigned for trial in the circuit court as issues of fact. After determining what action to bring, the students assigned to the case are required to issue the proper process and prepare and file the necessary pleadings, subpoena the witnesses, select the jury, examine and cross-examine the witnesses, and argue the case to the jury. Each student is required to participate in the trial of at least one common law, one equity, and one criminal case and must take part in carrying one of each to the supreme court for review.

The work of the practice court in criminal pleading and procedure is conducted by Dean Hughes; that in equity pleading and procedure by Professor Trusler; and that in common law pleading and procedure by Professor Crandall.

FIRST YEAR

FIRST SEMESTER

CONTRACTS.—The nature of contract; offer and acceptance; form and consideration; capacity of parties; reality of consent; legality of object; operation of contract. Text-books: Willis on Contracts and Huffcut and Woodruff's Cases on Contracts. (5 *hours. Dean Hughes.*)

ELEMENTARY LAW AND ELEMENTARY REAL PROPERTY. Study of the elementary principles of the law as given in Books I, II and III of the first edition of Robinson's Elementary Law and the first six chapters of Hopkins on Real Property. (4 *hours. Professor Crandall.*)

DOMESTIC RELATIONS.—This course considers thoroughly the law of husband and wife, parent and child, guardian and ward, infants, persons *non compos mentis* and aliens. Text-books: Long's Domestic Relations and the Statutes of Florida. (2 *hours. Professor Crandall.*)

TORTS.—History and definitions; elements of torts; conflicting rights; mental anguish; parties to tort actions; remedies; damages; conflict of laws; method of discharge. Text-books: Burdick on Torts and Burdick's Cases on Torts. (3 *hours. Professor Trusler.*)

CRIMINAL LAW.—Nature of crime; common law and statutory offenses; mental element in crime; insanity, intoxication, infancy, coercion, ignorance and mistake as bearing on exemption from criminal liability; necessity; justification; agency; consent; condonation; contributory acts; principals; accessories; classification and study of specific crimes; former jeopardy; state and federal jurisdiction. Text-books: Hughes on Criminal Law and the Statutes of Florida. (2 *hours. Dean Hughes.*)

SECOND SEMESTER

SALE OF PERSONAL PROPERTY.—Sale and contract to sell; statute of frauds; illegality; conditions and warranties; delivery; acceptance and receipt; vendor's lien; stoppage in transitu; bills of lading; remedies of seller and buyer. Text-book: Tiffany on Sales. (1 *hour. Professor Trusler.*)

TORTS.—Exhaustive study of particular torts, including among others, false imprisonment; malicious prosecution and abuse of process; conspiracy; slander and libel; trespass; conversion; deceit; nuisance; negligence. Text-books: Burdick on Torts and Burdick's Cases on Torts. (2 *hours. Professor Trusler.*)

AGENCY.—Definition and divisions; purposes for which the relation may be created and how; who may be principal or agent and evidence of the existence of the relation; ratification; delegation of authority by agent; termination, nature and extent, construction and execution of the authority; rights, duties and liabilities of agent, principal and third persons, the one to the other; particular cases of agents. Text-books: Mechem's Outlines of Agency and Mechem's Cases on Agency. (2 *hours. Dean Hughes.*)

COMMON LAW PLEADING.—Definition and classification of actions; proceedings in an action; analysis of the declaration; Stephen's Rules of Pleading. Text-books: Andrews' Stephen's Common Law Pleading, the Statutes of Florida and the Supreme and Circuit Court Rules in Common Law Actions in Florida. (3 *hours. Professor Crandall.*)

EQUITY JURISPRUDENCE I.—History and Definition; jurisdiction; general maxims; equitable estates, interests and primary rights, including a study of trusts, the powers, duties and liabilities of trustees; mortgages; equitable liens; assignments. Text-books: Eaton on Equity and selected cases. (2 *hours. Professor Trusler.*)

REAL PROPERTY II.—Text-books: Hopkins on Real Property and the Statutes of Florida. (2 *hours. Professor Crandall.*)

CRIMINAL PROCEDURE.—Jurisdiction and venue; arrests, searches aad seizures; extradition; preliminary examination,

bail and commitment; modes of accusation; the form of accusation, pleading, proof; variance; verdict and judgment; proceedings after verdict; evidence; habeas corpus. Text-books: Hughes on Criminal Procedure and the Statutes of Florida. (1 *hour. Dean Hughes.*)

WILLS.—Definition, nature and kinds of wills; a devisable estate; who may make a will; error, fraud, undue influence, mistake; who may take by will; formal requisites of wills; revocation; re-publication; by what law wills are governed; construction and effect of wills; lapse and substitution; rights and liabilities of devisees and legatees; descent and distribution. Text-books: Rood on Wills and the Statutes of Florida. (2 *hours. Professor Crandall.*)

SECOND YEAR

FIRST SEMESTER

EQUITY PLEADING.—Nature and object of pleadings in equity; parties to a suit in equity; proceedings in a suit in equity; bills in equity; the disclaimer; demurrers and pleas in equity; replication and answers in an equitable suit. Text-books: Shipman's Equity Pleading, Rules of the Circuit Court in Chancery in Florida, and the Statutes of Florida. (2 *hours. Professor Trusler.*)

EVIDENCE.—Rules as to admission and exclusion of evidence; judicial notice; parole evidence rule; burden of proof and the right to open and close; competency and examination of witnesses; production of documents, persons, and things; direct examination, cross examination, and redirect examination. Text-books: Hughes on Evidence and the Statutes of Florida. (3 *hours. Dean Hughes.*)

BAILMENTS AND CARRIERS.—Nature and classification of bailments; rights and liabilities of the parties; innkeepers, carriers of goods as to liability, discrimination, compensation, lien; carriers of passengers as to duty to accept, accommodations, ticket, ejection, personal injuries; actions against carriers. Text-book: Goddard's Outlines of Bailments and Carriers. (1 *hour. Professor Crandall.*)

BRIEF MAKING AND THE USE OF LAW BOOKS.—Where

to find the law; how to use statutes and decisions; how to find the law; the trial brief; the brief on appeal and its preparation. Text-book: Cooley's Brief Making and the Use of Law Books. (1 *hour. Professor Crandall.*)

EQUITY JURISPRUDENCE II.—Accident, mistake, and fraud; penalties and forfeitures; priorities and notice; bona fide purchasers; estopped; election; satisfaction and performance; conversion; specified performance; injunction; reformation; cancellation; cloud on title; ancillary remedies. Text-books: Eaton on Equity and selected cases. (2 *hours. Professor Trusler.*)

ORGANIZATION OF AND PROCEEDINGS IN THE COURTS OF FLORIDA IN CIVIL ACTIONS.—

a. *In General.*—Disqualification, resignation, and removal of judges; judge's power in vacation; judge ad litem; parties to suits at law; locality and consolidation of actions; joinder of causes of action; rule days; commencement of suits at common law; appearances, defaults and judgments upon default; pleadings at law; witnesses and evidence; jurors; judgments and executions; motions for new trial and in arrest of judgment; lis pendens; appellate proceedings at law and in probate matters; limitation of actions.

b. *Supreme Court.*—Statutory powers; members of the court; its terms, record, clerk, seal, decisions, and reports.

c. *Circuit Court.*—Statutory powers and duties of judges; terms; records and dockets to be kept by the clerk; seal and records.

d. *Circuit Court in Chancery.*—Its power in vacation; locality of action; process, its service and return; bill, demurrer, plea and answer; practice and evidence; masters in chancery; decrees; rehearings and appeals; injunctions; ne exeat; divorce and alimony; partition of property; quieting titles; disability of minors and married women; liens.

e. *Statutory Jurisdiction of Circuit Court.*—Ejectment; reestablishing lost papers; adoption of children; eminent domain; court commissioners.

f. *County Court.*—Jurisdiction; terms; clerk; seal; records; appeals; rules of practice.

g. *County Judge's Court.*—General powers; bonds; clerk; seal; probate powers; as justice of the peace; forcible entry and detainer.

h. *Courts of Justices of the Peace.*—General provisions; jurisdiction; proceedings before, at, and after trial; proceedings on appeal.

i. *Special Statutory Proceedings at Law.*—Attachment; garnishment; forcible entry and detainer; replevin; statutory liens; landlord and tenant.

j. *Extraordinary Legal Remedies.*—Habeas corpus; quo warranto; prohibition.

Text-books: General Statutes of Florida, decisions of Florida Supreme Court and the Common Law and Equity Rules of Practice of the Circuit and Supreme Courts of Florida. (*2 hours a week throughout the year. Professor Crandall.*)

THE UNIVERSITY PRACTICE COURT.—(*One hour a week throughout the year. Dean Hughes, Professor Trusler, and Professor Crandall.*)

FLORIDA CONSTITUTIONAL LAW.—Declaration of rights; legislative, executive, and judicial departments of government; suffrage and eligibility; census and appointment; counties and cities; taxation and finance; homestead and exemptions; married women's property; education; public institutions; miscellaneous provisions. Text-books: The Constitution, Statutes and judicial decisions of Florida. (*1 hour. Professor Trusler.*)

UNITED STATES CONSTITUTIONAL LAW.—General principles; distribution of governmental powers; congress; the chief executive; the judiciary; police powers; eminent domain; checks and balances; guarantee of republican government, civil rights; political privileges; guarantees in criminal cases, impairment of contractual obligations; municipal corporations. Text-books: Cooley's Principles of Constitutional Law and Cooley's Constitutional Limitations. (*2 hours. Professor Trusler.*)

BROOM'S LEGAL MAXIMS.—A reading course running throughout the year. (*Dean Hughes.*)

SECOND SEMESTER

JURISDICTION OF THE UNITED STATES COURTS.—Under the federal constitution; jurisdiction of the different federal courts; ancillary and appellate jurisdiction; bankruptcy; admiralty suits; federal questions; removal from state to federal courts, habeas corpus. Text-books: Hopkin's Judicial Code and selected cases. (1 *hour. Professor Trusler.*)

NEGOTIABLE INSTRUMENTS.—Law merchant; definitions and general doctrines; contract of the maker, acceptor, certifier; drawer; indorser; vendor, accommodator, assurer; proceedings before and after dishonor of negotiable instruments; absolute defenses; equities; payments; conflict of laws. Text-books: Bigelow on Bills, Notes and Checques, the Negotiable Instrument Act of Florida, and selected cases. (2 *hours. Professor Crandall.*)

LEGAL ETHICS. A consideration of the profession of the law in its relation to society, embracing the duties the lawyer owes to the commonwealth, to the court, to his professional brethren, and to his clients. Text-books: Warvelle's Legal Ethics and the Code of Ethics adopted by the American Bar Association. (1 *hour. Dean Hughes.*)

EXECUTORS AND ADMINISTRATORS.—When necessary; appointment and qualification; acceptance or renunciation; foreign and interstate administration; powers, duties and liabilities of executors and administrators; inventory; assets of estate; insolvent estates; distribution; accounting and allowances. Text-books: Croswell's Executors and Administrators and the Statutes of Florida. (2 *hours. Professor Trusler.*)

DAMAGES.—General principles; nominal, compensatory, exemplary, and liquidated damages; interest; value; pleading and practice; breach of contracts for sale of goods; actions against carriers; death by wrongful act; wrongs affecting real property; damage in tort action; breach of marriage promise. Text-book: Cases selected from Florida Reports. (1 *hour. Professor Trusler.*)

PARTNERSHIP.—Definitions and classifications; what constitutes a partnership; contract of partnership; firm name and

good will; capital of firm; partnership property; rights and liabilities of partners among themselves and as to third persons; actions; dissolutions; limited partnerships. Text-book: Shumaker on Partnership, and selected cases. (2 *hours. Dean Hughes.)*

PRIVATE CORPORATIONS.—Nature of a corporation; creation and citizenship of corporations; defectively organized corporations; promoters of corporations; powers and liabilities of corporation; corporation and the state; dissolution of corporations; membership in corporations; management of corporations; creditors, their rights and remedies; foreign corporations. Text-books: Elliott on Corporations and the Statutes of Florida. (3 *hours. Dean Hughes.)*

ROLL OF STUDENTS

1913-1914

Seniors

Name	*Postoffice*	*State or County*
Alexander, L. W.	Jacksonville	Duval
Arnold, A. C.	Jacksonville	Duval
Baxter, M.	Blackshear	Georgia
Blackman, W., A.B. (Rollins College)	Winter Park	Orange
Buie, A. P.	Bell	Alachua
Bullock, J. R.	Ocala	Marion
Carter, H. B.	St. Augustine	St. Johns
Futch, L. E.	St. Petersburg	Pinellas
Henderson, R. A.	Fort Myers	Lee
Hill, W. L.	Gainesville	Alachua
Jackson, G. W.	St. Augustine	St. Johns
Jacobson, J. E., B.S. (University of Florida)	Jacksonville	Duval
Knight, A. W., Jr., A.B. (University of the South)	Jacksonville	Duval
Lischkoff, L. N.	Pensacola	Escambia
Mobley, P. D.	Punta Gorda	DeSoto
Moore, T. W.	Jacksonville	Duval
McGarry, P. D.	Jacksonville	Duval
Owens, F. E.	Eustis	Lake
Perry, P. R.	St. Augustine	St. Johns
Peterson, J. H.	Lakeland	Polk
Poppell, J. C.	Starke	Bradford
Pruitt, T. P.	Tallahassee	Leon
Ray, T. C.	Marianna	Jackson
Robbins, R. P.	Titusville	Brevard
Shackleford, R. W., A.B. (University of Florida)	Tallahassee	Leon
Smith, T. H.	Marianna	Jackson
Sutton, J. B.	Lakeland	Polk
Taylor, R. R., Jr.	Miami	Dade
Welch, C. L.	Tampa	Hillsboro
Wiggins, E. E.	Hawthorn	Alachua
Wiggins, C. M.	Bartow	Polk
Wilder, A. D.	Orange	Liberty

Juniors

Barker, W. J.	Jacksonville	Duval
Boyer, C. A.	Jacksonville	Duval

Name	*Postoffice*	*State or County*
Bryant, T. W., B.S. (University of Florida)	Lakeland	Polk
Carter, F. B., Jr.	Pensacola	Escambia
Dawson, C. R.	Jacksonville	Duval
Davis, H. F.	St. Augustine	St. Johns
Edge, L. D.	Groveland	Lake
Goldberg, R. A.	Madison	Madison
Groover, J. M.	Lakeland	Polk
Hale, Hugh	Brooksville	Hernando
Houston, Pat	Jacksonville	Duval
Jarrell, R. L., A.B. (University of Florida)	Starke	Bradford
Johnson, Lee, B.S. (Ntl. Greek Academy of Constantinople)	Constantinople	Turkey
Key, R. G.	St. Petersburg	Pinellas
Kirkbride, A. S.	High Springs	Alachua
Leitner, S., A.B. (University of Florida)	Kissimmee	Osceola
Lotspeich, A. A.	Weaverville	North Carolina
Maguire, R. F.	Ocoee	Orange
Moffat, V. R.	Miami	Dade
Newman, L. B.	Jacksonville	Duval
Oliphant, H. K., Jr.	Bartow	Polk
Pacetti, T. A.	St. Augustine	St. Johns
Price, T. E.	Marianna	Jackson
Pyle, G. E.	Gainesville	Alachua
Rabinovic, A. M.	Tampa	Hillsboro
Rush, H. L.	Gainesville	Alachua
Sawyer, H. S., A.B. (Guilford College)	Merritt	North Carolina
Slagle, Dean	Berea	Kentucky
Stevens, A. B.	St. Petersburg	Pinellas
Stewart, J. B.	Hilliard	Nassau
Trammell, C. C.	Lakeland	Polk
Upchurch, F. D.	Jacksonville	Duval
White, R. R., A.B. (University of Florida)	Starke	Bradford
Wilson, B. C.	Bartow	Polk
Wilson, M. R.	Palmetto	Manatee

Specials

Barrs, N.	Gainesville	Alachua
Johns, E. M.	Starke	Bradford
Knowles, G. B.	Greenwood	Jackson
Meredith, B. F.	Fort Myers	Lee
Shoemaker, J. E.	Gainesville	Alachua
Shuman, J. H.	Monticello	Jefferson

Name	*Postoffice*	*State or County*
Solomon, B. L.	Marianna	Jackson
Thompson, Harry, B.S. (University of Florida)	Gainesville	Alachua
Waits, W. H.	Gainesville	Alachua
Williams, J. E.	Haskill	Polk

REGISTER

BACHELOR OF LAWS

Class of 1914

Leon Wilson Alexander	Jacksonville, Fla.
Albert Charles Arnold	Jacksonville, Fla.
Maxwell Baxter	Blackshear, Ga.
Worthington Blackman, A.B. (Rollins College)	Winter Park, Fla.
Archie Patterson Buie	Bell, Fla.
Robert Abner Henderson, Jr.	Fort Myers, Fla.
William Luther Hill	Gainesville, Fla.
Albion Williamson Knight, A.B. (University of the South)	Jacksonville, Fla.
Leon Nathaniel Lischkoff	Pensacola, Fla.
Paul David McGarry	Jacksonville, Fla.
Paul Darling Mobley	Punta Gorda, Fla.
Thomas Wesley Moore	Jacksonville, Fla.
Peter Richard Perry	St. Augustine, Fla.
James Hardin Peterson	Lakeland, Fla.
Joseph Clayton Poppell	Starke, Fla.
Thomas Pitts Pruitt	Tallahassee, Fla.
Thomas Carleton Ray	Marianna, Fla.
Robert Wooten Shackleford, A.B.	Tampa, Fla.
Thaddeus Hentz Smith	Marianna, Fla.
John Brannen Sutton	Lakeland, Fla.
Robert Rives Taylor, Jr.	Miami, Fla.
Conlyn Lehman Welch	Tampa, Fla.
Chester Maurice Wiggins	Hawthorn, Fla.
Alonzo DeWitt Wilder	Orange, Fla.

PHI KAPPA PHI

Class of 1914

L. W. Alexander
W. Blackman
W. L. Hill
A. W. Knight
P. D. Mobley
P. R. Perry
J. H. Peterson
T. C. Ray
R. W. Shackleford

PRIZES

Commencement 1914

Junior Oratorical Medal	A. M. Rabinovic
Callahan and Company Law Prize	A. W. Knight

Florida State College for Women

Tallahassee, Florida

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2. **Normal School** which offers the following courses:

   (1) Teacher's Course leading to the degree of Licentiate of Instruction.

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   (3) Elementary Professional Course for two years, intended for those who wish to prepare for teaching, but cannot meet the requirements of the Teacher's Course.

   (4) Course for Senior High School Graduates of two years, leading to the degree of Licentiate of Instruction.

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For further information write,

EDWARD CONRADI, Ph.D., President

Tallahassee, Florida

Pepper Pub. & Ptg. Co., Gainesville, Fla.

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University of Florida

Gainesville, Florida

Commencement Exercises

June 7-9, 1914

Sermon by Samuel Chiles Mitchell, Ph.D., LL.D.
Address by Ralph Barton Perry, Ph.D.
Degrees Awarded
Calendar

UNIVERSITY OF FLORIDA

MEMBER

OF

THE NATIONAL ASSOCIATION OF STATE UNIVERSITIES.

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THE AMERICAN ASSOCIATION OF AGRICULTURAL COLLEGES AND EXPERIMENT STATIONS.

THE SOUTHERN INTERCOLLEGIATE ATHLETIC ASSOCIATION.

THE LAND-GRANT COLLEGE ENGINEERING ASSOCIATION.

BACCALAUREATE SERMON

SAMUEL CHILES MITCHELL, PH.D., LL.D.
President Medical College of Virginia

After reading several verses from the ninth chapter of St. John, Dr. Mitchell took as his text a part of the fourth verse: "I must work the works of him that sent me". Jesus, he said in part, was a hard worker, had no time for aught else than his work, and in three years had accomplished an amount of toil that would have immortalized him, even if he had been but a mere man. He was a hard worker and one who received no wages, for in three years of ministry he was not paid a cent for his real labor.

This lack of pay for work is a state not peculiar to Jesus. Real work—work involving devotion to principles, sympathy, love, self-sacrifice—cannot be rewarded in coin. What reward can a mother receive for her unselfish care of her child? For his loving services Jesus received contumely continually, and finally the cross. And this is characteristic of the fate of the real servants of mankind. Exile and prison come to the great benefactor. Indeed it has been said that the prison is the workshop in which much of the really great work of the world has been done. In our modern life a Paul would be in every rogues' gallery.

Jesus was an ardent worker, but he did not work for wages. He would have said not "I must *work*", but "I *must* work". He felt an inner-impelling necessity, and was ever endeavoring to explain this to his friends. He was impelled to work even on the Sabbath, and when persecuted gave this impulse as an apology. Others misunderstood, but he knew that deity was not synonymous with inactivity. He had a different idea; for him the deity was equivalent to doer.

"My father worketh", he said, "and so far as I partake of his nature I work. God is energy and therefore I am en-

ergy". This is the dynamic conception of the world. How often Jesus said, "Thy will be done", for with him everything had its conception in God!

His conception of will made it a law to which we must yield implicit obedience. The divine purposes are something to tie to, something with which to cooperate. And so Jesus invites you to cooperate with him for a better social order, for a completer fulfilment of the will of God. There is a great difference in the kinds of obedience. It is well when a son obeys his father's commands, but the father feels a much higher pleasure when the son executes the wish before the command is given. Obedience culminates in cooperation. This idea leads us to Jesus' conception of life, a life of constructive citizenship.

There are two entirely different conceptions of the world. The one conceives the world as made, crystallized, final. This is the child's view. The child thinks of his home as something that is as it always was and always will be. And the same conception is held by many of art, society, government, religion—they are as unchangeable and as eternal as the everlasting hills.

The child grows and becomes a man. He has seen changes in his home, he has missed the loved presence, has seen the vacant chair. Finally he attains the second or man's view; the only constant in the world is change. We are in a world of fluid energy, in a plastic world, where everything is working and changing in accordance with divine will.

In Jesus Christ's conception of the world we find the dynamic element, we see a world of progress, of growth. Call it western civilization, if you please, it is really using energy in accordance with divine will.

On a rock splashed by the foaming waters of Niagara are cut three lines that interpret Christ's conception of the world:

All is change.
Eternal progress.
No death.

There is a splendid arena lying before the graduates of

to-day, an arena that demands the efforts of the men with the nobler conception. This is an age of belief in life, an age of trust. Modern science is essentially religious and shows much of the spirit of Jesus' life. Even socialism is religious and seeks the brotherhood of man. Democracy upholds the idea of Christ, that we gain by showing our possession with others. The modern conception is of work in accordance with divine will.

The blind man's story does not lead Jesus to comment on the origin of sin. He has little to do with mere speculation. But the blind man's story well shows Jesus at his work and his great characteristics. What did Jesus do? He made the physically defective whole. He opened up a new career for the blind man. For after Jesus' hand had been laid upon his eyes, he no longer was forced to be a beggar. Now he too, as other men, can make money, can have a career. It was characteristic of Jesus to open up new careers. He took twelve humble, ignorant, obscure fishermen and peddlers of fish, living in huts in obscure places, and after three years of companionship with them, he developed them into men, who have influenced all subsequent history. And in this companionship Jesus showed us the real essence of true education. Jesus' conception of his work was that it was to make men, men who can see light in its totality, men in harmony with the divine constructive plan of their generation.

Out of the twelve fishermen he made men who were willing to face death and men who attained to spiritual vision. Putting together scattered bones until finally he succeeded in restoring the form of extinct animals, Cuvier gained his great renown. Cuvier was a genius. Living among publicans and sinners, ever showing strong sympathy for the under dog, the down-trodden, the abject, Jesus developed paragons of excellence. Jesus was God. And to develop human character he always made use of love, sympathy, companionship.

Jesus encouraged the blind man. Christ was always true to all his obligations, always manifested true gentlemanliness. Putting aside all other claims upon him, he hunts out the poor persecuted beggar, hidden away in some dark cor-

ner, and ministers unto him with kindly sympathy. And this is indeed typical of Jesus. He is of infinitely attractive personality. Children, the lame, the blind, lepers, flocked unto him. His outlook was one of encouragement.

Christianity is not a religion of sorrow, as the German philosopher asserts; it is a religion of encouragement. Life is a spiritual ascent, with nature ever ready to help.

In his youth, the speaker said, he had once served as a clerk. He has forgotten many of the incidents of his store life, but he will never forget a present made him by his employer, a present of a book, "Friend, go up higher!" This was his message to all. Seek to live in a better house, do a larger business, wield a finer influence, have a firmer grasp of true conceptions, enjoy a sweeter communion with God, go up higher.

Jesus was a street preacher and the real founder of the Salvation Army. One day while teaching in the streets he attracted the attention of a rich pharisee who invited him to dinner, but did not show him any of the usual courtesies. But a woman with a sorrowful past washed his feet with her tears and wiped them with the hair of her head. The patronizing rich man looked on contemptuously, but Jesus, who was always sensitive to courtesies, told the wondrous story of the two debtors, and asked "Which of these would love the more?" Then he made three thrilling statements—She has loved much. Thy faith has saved thee. Go in peace.

Jesus revealed himself to the blind man as the Son of God.

We can do every one of these four things and can do them better than Jesus. We can make men whole. To go to New Orleans, to the Canal Zone, to Jacksonville, and to eradicate consumption or yellow fever is to do a greater thing than to restore Lazarus to life. Sanitation, preventive medicine—these are the outworkings of the spirit of Jesus.

In Richmond among the humbler classes seven out of twenty children die in their first year, among better classes only one child dies out of twenty. What greater work than

to save the six? We need in Virginia, in Florida, one million healthy human animals. By spending one dollar and eighty-one cents apiece many a home in Philadelphia has been changed for a child from a hell into a heaven.

Let us open new careers, found new industries, advance the public schools, and especially the rural schools, raise the ideals of public life—by so doing we are showing the spirit of Christ.

The speaker then told of the incalculable good done by Semmes in 1634 and by Eaton in 1650 in founding a school at Hampton, Virginia. Their small gifts have become by natural increase $10,000, producing an annual income of $600, and although battles have been waged around the Semmes-Eaton High School, both during the Revolutionary and during the Civil War, every cent of the money is intact. When giving to colleges one reaches an arm into eternity.

In that school was educated George Wythe, who became the teacher of Jefferson, Marshall, Monroe and of Clay, and who through them has greatly influenced American history.

Take interest in your neighborhood. Build up your community school. Emulate Dr. Knapp, the Benjamin Franklin of American agricultural life.

The age is showing this spirit of Jesus. The speaker showed by statistics how the South is developing because of this spirit.

He closed with a touching anecdote of General Lee, in which he showed that Lee's passion was love, sympathy, constructive, and that, although great as a warrior, he was greater as a lover—a lover of his wife, of his section of the reunited nation, of the youth of his country.

COMMENCEMENT ADDRESS

By Professor Ralph Barton Perry, Ph.D.
Head of Department of Philosophy
Harvard University

It is horrible to contemplate the volume of discordant advice that is being thundered this month from Commencement platforms into the ears of hapless Seniors. It is perhaps fortunate that so little of it is followed. For it is always one-sided. It is characteristic of most advice and exhortation that it is only a part of the truth. It is an exaggeration of that particular half-truth which the exhorter thinks is timely, and which he believes is going to be offset by contrary influences. It is a push against some existing over-tendency, an attempt to stem some tide that is running too high, and in the hope of securing that balance and moderation in which right conduct always consists.

This is my apology for coming before you to-day with an exhortation that on the face of it may appear to be strained or even absurd. For I propose in a sense to preach against efficiency or success. But I do not so because I do not see their importance, but because I suspect that you already know their importance well enough, and possibly even too well. Or if you do not, there are many who can proclaim that importance more eloquently than I. I take it that there is something abroad, something in the air, that is tending to promote the useful virtue, to encourage thrift, initiative, industry, cooperation, civic pride, and all those qualities of mind and will that make communities sound and prosperous.

I want therefore to make out as strong a case as I can for what may in a sense be called the useless virtues, for those qualities of mind and will that cannot be measured by the standard of efficiency, but whose very value lies in the fact that they do not immediately contribute to practical success.

First of all it is necessary that we should reflect upon the meaning of a word that is perpetually in our mouths, the word "practical". You will observe that it isn't customary for us to reflect upon its meaning at all. It is supposed to express a finality. To call a thing practical is to praise it; to call it unpractical is to condemn it. It never occurs to us as a rule that practicality is a *special kind* of value. If that did occur to us, then of course we should be in the position of admitting that there is at least one kind of value from which it may be distinguished. And this would be equivalent to admitting that when we call a thing practical or unpractical we have not, as is usually assumed, provided sufficient grounds for approving or rejecting it.

President Cleveland invented a phrase which is an almost perfect expression of the attitude of practicality. There is nothing profound about it; nor does it possess any striking literary merit; but it never fails to appeal and has become a part of our common speech, so thoroughly does it coincide with the bias of common sense. He once remarked, as you all know, that "It is a situation, and not a theory that confronts us". I do not remember what situation it was that confronted us; but the practical man is always confronted by a situation. I shall suggest presently that every situation does in truth involve a theory; but if so, the practical man ignores it. His practicality lies in confining himself to finding an act that will meet the situation. He has a family to support, or an industrial plant that must be made to pay, or an examination that must be passed, or an office to which he proposes to be elected. His problem is the comparatively narrow and simple problem of finding the means to fit the occasion and achieve the result.

Practicality means skill, energy, speed, quantity of performance, without reference to the profitableness of the result. Not that the result may not in point of fact be profitable—but the question is not raised. The profitableness of the result is assumed from the fact that everybody is mad about it. As a popular song puts it "Everybody's doing it". Whatever everybody is doing recommends itself without further justification. Whatever everybody's doing is "the

thing to do". A man is willing to wear anything apparently, if his tailor says "they're wearing them that way". So we eagerly adopt the pursuits that we find in vogue; and apply ourselves to making a good showing. Most people, perhaps, appear to be dividing their energies between three pursuits, making money, dancing, and playing baseball or watching someone else play it. To make as much money as possible, to dance as well or as often as possible, and to defeat your opponent, either personally or vicariously through a favorite team, these tasks absorb the energies of the typical practical man. He does not adopt and follow a plan of life by conscious reflection, but he is constantly in a current of life, which flows now this way and now that, and sweeps him along with it. Or the practical man is like the man who finds himself in a great throng of athletes who are matching their skill and speed and prowess against one another. He goes in for this or that, spurred by emulation, and seeks to outstrip his competitors in some race without concerning himself with the direction of the course, and the place in which he will find himself at the end of the race. There is a false proverb which teaches us that whatever is worth doing is worth doing well. I call it false because it is so evident that there are some things that are only worth doing, provided one is perfectly willing to do them well. It is a part of practical wisdom to know what it is worth while to exert oneself about, and what may be done in a spirit of playful carelessness. But there is a more popular maxim which is so widely observed that it is never formulated—the maxim that whatever is done well is worth doing. This, I take it, is the maxim of the practical man. Do what the next man is doing, but go him one better. Make a record. There is a whole code of life in this passion for records. To make or hold a record means to excel everybody else in a precisely measurable degree. To excel everybody else in an activity in which everybody else would like to excel, to hold the most coveted record, this would represent the supreme practical success.

We should now be sufficiently clear in our minds as to what practicality means. But it is evident that our critics in

judging us to be a peculiarly practical people mean to accuse of a fault; and we shall not have understood the criticism until we have come to see wherein the fault lies. It is evident that they mean to convey the idea that this question, Whither? which is said to trouble us so little, is an important question; and that we are making a serious mistake in ignoring it.

I wonder if there is any better definition of that most hateful of predicaments, that we describe as *having made a fool of oneself*, than to say that it is to have exerted oneself for an end that turns out to be worthless in the attainment. Suppose a man to have devoted himself passionately to the accumulation of riches, to have spent himself, literally, in getting them, and to have prided himself on his skill and efficiency, only to find that they don't amount to anything when you have them, so that although one has been so extraordinarily busy in doing one has in reality done nothing. Such a man might well feel in the flat and empty years of his ebbing life that he had played the fool; and that he might better have been less busy if only he might then have taken a little time to think ahead and select some worthy goal before throwing himself headlong into the pursuit. A moment's thought about the ends themselves, looking before you leap, curiously inquiring into the itinerary before joining the procession, a little cool philosophy before the best of action, this is what I mean by the useless virtue—the unpractical wisdom of Socrates. Surely it has its place. You cannot make life up out of it altogether. Socrates in his most Socratic moods will not make an effective member of the fire brigade. There are times for action, and when they come the man of the hour is the man who has no doubts, but only instincts and habits. But our instincts and habits take care of themselves better than does our cool reflection. Therefore I urge upon you, doubtless with some exaggeration, the value of the rarer but not less indispensable mood. The mood of practicality is the vulgar mood; not in the sense of being debased, but in the sense of being usual or typical. For the individual it is the line of less resistance. Being usual it sets the standards by which a man is judged

by the crowd. It is favored by that popular prejudice called common sense. It requires no exhortation of mine in order to get a hearing.

It would seem that practical efficiency and disinterested reflection might then divide life between them, each having its appropriate season, and each requiring in society at large its special organs and devotees. But since we are for the moment the partisans of disinterested reflection, let us recognize a certain advantage that it has over its rival—the advantage, namely, of magnanimity. I mean that while disinterested reflection acknowledges the merit of its rival, practical efficiency in its haste and narrow bent is likely to be blind and intolerant. If I were asked "What, in the name of common sense, is philosophy", I should be unable to answer. *There is no answer.* For amongst the categories of common sense there is not provision for philosophy. With a person wholly dominated by common sense, caught and swept along in the tide of practical endeavor, or wholly dominated by social habit, the philosophical part is in disuse and may be atrophied altogether. But if I ask, "What, in the name of philosophy, is common sense", I can find an answer—just such an answer perhaps as we are now giving. In short, disinterested reflection is more inclusive, and more circumspect than practicality.

But I have not even yet exhausted the peculiar merits of the practical value of disinterested reflection. I have spoken of its importance as testing the value of ends, and so confirming or discrediting our more impetuous practical endeavor. But there is another point. I refer to the advantage of unapplied knowledge as giving man resourcefulness and adaptability, a capacity to meet novel situations. Let me attempt to make my meaning clear. We praise science in these days, and most of us prefer it to poetry or philosophy because we can see the *use of it.* It is characteristic of our practical standards that we regard such men as Watts, Bell, Morse, or Edison as typifying the value of science. The inventor, the engineer, is the man of solid achievement. And why? Because, again he supplies that for which the need is already felt. We want light, communication, and transportation,

and such men as these give us what we want. Therefore we are grateful. Similarly the man who discovers a cure for cancer will be a hero among men. There is a powerful demand, an eager longing for that which he will have to give, and his reward will be ready for him when he comes. Now we need not disparage his glory. But this is perfectly certain. When the discovery is made, it will be due to the store of physical, chemical, physiological and anatomical truth that has been accumulated by men who were animated mainly by theoretical motives. These investigators have devoted themselves to winning knowledge for which there was at the time no practical demand. This means that they had to be sustained by something else than the popular applause that greets the man with the remedy. Such men are sustained no doubt by the encouragement of their fellow investigators, or by the patronage of the state. But they rely more than the inventor or engineer upon the inward support of their own love of truth, and upon a certain just pride of the intellect.

You will see clearly enough what I have called useless virtues, or unpractical values are not divorced from life in any absolute or ultimate sense. We may as well declare once and for all that there is no virtue or value whatsoever that is divorced from life in such a sense. That it is impossible that knowledge should be absolutely useless is self-evident. For to know at all is to know the world we live in; and to know it is to bring it within the range of action, pave the way to the control of it. The better we know the world the more effectually we can live in it. This holds unqualifiedly. But there is a very great difference between what we might more correctly call *long-range* and *short-range* practicality. What we usually speak of as practical would correspond to what I here speak of as short-range practicality. It means a readiness *to meet the immediate occasion as is dictated by the momentary desire.* Such practicality is a perpetual meeting of emergencies. It is a sort of living from hand to mouth, an uninspired and unillumed opportunism. What is ordinarily from this standpoint condemned as unpractical, and which is unpractical *from this*

standpoint, may now be called long-range practicality. This is to say, it is that provision, that thorough intellectual equipment, that wisdom as to the ultimate and comparative worth of things without which there can be no security nor any confirming sense of genuine achievement. It is that which makes the difference between making a fool of oneself, however earnestly or even successfully, and living in a manner that would be able to endure the test of time, and would not appear ridiculous in the eyes of one who was a witness of eternity.

You will wonder perhaps why I should take the trouble to say all this to you now. It is because it seems to me that you who are graduating from the University, and your friends and fellow-students as well, should on this occasion reflect upon the distinctive thing which the University is designed to give to you and through you to the community. I make bold to-day that that distinctive thing is intellectual originality or critical power, the capacity to raise forgotten questions and ask "Why?" when the majority say "Of course". How shall the University foster and impart this capacity?

These are the qualities of mind which I want to recommend to you; the practice of disinterested reflection and research; a power to distinguish between knowledge and opinion, belief or information; a recognition of the limits and degrees of knowledge; a love of knowledge for its own sake; and a spirit of fellowship with all who love knowledge whatever be the particular opinion that they hold. These seem to me the values peculiarly suitable to a university and to university bred men.

You will almost certainly misunderstand me unless I hasten to say that the detachment from affairs which all these values imply does not at all mean that one shall occupy oneself with recondite or artificial topics. I am not proposing that a university shall dedicate itself to the study of hyperspace, Indic philology, and the transcendental ego of apperception. These are proper enough objects of study, but they are not good illustrations of my meaning, because they put the emphasis in the wrong place. It is not the sub-

ject of study that is to be detached from life, but the method and the mood of study. There is no better subject of study for the purposes I have in mind than life itself. I want simply to emphasize the difference between studying life and living it. I want to urge upon you the importance of standing off a little from the current of affairs—even when you study affairs themselves. The thing you study may be as practical as you please. There is no more emancipating topic of study than the study of what you mean by practicality itself. Similarly one may study commerce, or politics, or the distribution of wealth, or human happiness, or any near and familiar thing. I want only to urge that it is the particular business of a university to promote a quiet, leisurely, cool and profound study of these things; the sort of study which leads the mind to raise fundamental questions with a view to seizing on fundamental ideas—in the hope of an occasional flash of insight by which one may see far beyond one's habitual horizon. A single swift and momentary vision thus granted may endure through life and make the difference for the balance of one's years between intellectual slavery and intellectual emancipation. If a university is to accomplish what I propose, if it is to produce knowledge, teach the meaning of knowledge, together with its limits and degrees of certainty, if it is to promote the love of knowledge, and foster that spirit of tolerance without which none of these things is possible, then a university must be that place of all places in the world in which individuality is prized and respected.

You will readily grant, perhaps, that intellectuality and individuality are so inseparable that in order to promote the one, one must encourage the other. But there is a deeper reason for this connection, and one that is commonly overlooked. It is an interesting fact that only an individual can think. It is well known that there are certain phenomena of mind that may correctly be regarded as social. Every one has heard of an angry mob. In such cases the mob itself is angry—and it is a very different thing from, say, a thousand men each angry all by himself. Individualities melt and coalesce in the heat of passion; and the mob feels and acts

as a unity. There is also such a thing as social conscience, or as common opinion, or as customary belief. Opinion and belief are states of mind that may assume a social form. But there is no such thing as a mob's making inferences or demonstrating theorems or reflecting upon the premises of action. Society cannot know the sense of drawing a conclusion from premises or judging in the light of evidence. On the contrary society is perpetually tending to suppress these things. That is in so far as the individual becomes socialized he ceases to think, to criticise, and to know. The individual in detachment—desocialized—is the organ with which society has to do these things. And any community such as a university community which proposes to cultivate these things must encourage the individual to be himself even at the cost of uniformity of type.

It takes courage to be individual, and it takes discerning judgment to appreciate the importance of individuality. In other words, it is the sort of thing that both deserves our support and needs it. There are some things that our instincts will take care of, or will if only something is done to set them off. For example, if you drive a man into a corner he will usually fight and fight bravely. Put men into regiments, stir them with martial music or the symbols of loyalty, warm them by the heat of action, and you can make heroes of them. I do not mean to belittle military valor, when I say that it is not a rare or difficult virtue. It is certainly much less difficult than the patience with which the same soldier may bear lingering sickness or the fatigue of long marches when there is no enemy in sight. The reason is that there are instincts of combativeness and of social contagion which are always there to be aroused and which when once they are aroused are much more easily obeyed than resisted.

Now there is a certain form of university or college life of which the same thing is true. I refer to the collective enthusiasm, which exhibits itself in songs and cheers and athletic rivalry. This is none the less a good thing because it is comparatively easy to attain; but it is not the thing that we need especially to urge. It can be counted upon to take

care of itself, or it may be aroused at any time that it may be thought necessary. It only takes a crowd, a band, something familiar to the crowd, such as a name, a color, a tune, and a little knack of leadership, and the result is certain. The reason lies in the fact that one can depend upon the operation of instincts such as gregariousness, imitation, and emotional contagion.

As to the world at large I should say that this shouting with the crowd is not only easy, but that it is too easy; and that it is in danger of enslaving and submerging the individual. There never has been a time in the world's history in which blind social forces have been so strong. Through the increase of facilities for transportation and communication, and through the wide diffusion of the rudiments of education, all men are coming to form one great crowd together. The powerful forces that impel a man to go with the crowd, act with it, believe with it, feel with it, now operate over an enormous area, with a corresponding irresistible power. The forces which thus bring men together do good or evil. It all depends on what direction they take. So far as they themselves are concerned, they may take any direction. Hence the unprecedented demand for wise leadership; for a poise and independence that may see the way clearly and rally these forces to the attainment of good.

Where are our leaders to be bred? Where is the capacity for cool and independent decision to be cultivated? This is, I believe, the great and the unique opportunity for the university. Let the university dedicate itself to this one form of service—to be a nursery of individual thinkers. The university can scarcely go too far in this direction. It should be the one community that tolerates eccentricity and conceit in the hope that once in a while they may be, as they often are, the marks of growing genius. Being normal, being a good average man, of the familiar and popular type, is certainly agreeable; but it should, in a university at least, be regarded as not deserving of special note of praise. Most men are normal, and many will inevitably be or become so, for the simple reason that we call normal what most men are or tend to become. Exceptionality, distinction

is the thing, and to encourage it we must regard the freak or queer man not with hostility, but with hopeful interest.

It is a great mistake to suppose that one institution like the university should be expected to do every good thing at once. We are grateful to Colonel Goethals for having built the Panama Canal; it would be unreasonable to withhold our praise until we have learned whether he is a good tennis player or has a fine ear for music. If we can find a doctor who can cure our bodies, we do not ask him to save our souls. We do not charge him with impiety because he does not especially interest himself in the matter. Similarly the university is not designed to be a kindergarten, reform school, Sunday school, armory, or social club. Other institutions are. Let each institution be judged by its success in its own field. Let the university be looked to as a school for intellectual leadership. If it does not do this work, criticise it, or—better still—help it. But do not confuse the situation by asking it to discipline the young, spread the true faith, or stimulate good fellowship. If it does these things, as it no doubt will in a degree, so much the better; but they are not, in its case, the one thing needful. Above all do not ask the university to be directly useful. It would be much as though you would ask Newton to be a mechanic or Raphael a house-painter. Keep the money changer out of the temple of knowledge. It is better that a university should be a zoological garden of strange beasts, or even a museum of antiquities, than that it should become a mere corner of the market-place. You will see that if this be the true ideal of a university it will call for a very special and generous kind of loyalty on the part of its graduates—or on the part of the citizens who support it—for the good of the commonwealth. If you would be the true friend or benefactor of a university give to it not in order that your opinions may prevail, but in order that truth may prevail. Serve it, not to promote your own ideas, but in order that there may be ideas. Rejoice that there is more in the world than you would ever have thought of yourself. Cheerfully tolerate, and even help for the sake of the greater wisdom that may come of it in the end, opinions that you

do not agree with. Encourage inquiry, criticism and knowledge even when you don't understand, and thereby prove that you have more confidence in man than you have in your own powers.

You will have misunderstood me utterly if you think that I disbelieve in education for service. It is because I am thinking of service that I want the university to promote intellectual independence and originality. To do this is to render the peculiar service to which the university is dedicated and for which it is truly indispensable. And it is because I presuppose that every educated man with any strain of nobility in him is going out in the world to serve his fellows, that I am so eager that he should take with him that which will increase and elevate his service. Here he should learn to think for himself. But if he does it will turn out in the end that he has been thinking for others. A man who cannot think for himself cannot think at all. Having that power he may be qualified to enlighten and to lead, when otherwise he could do no more than follow blindly or exert himself at a task of which he does not know the meaning. I have not meant to encourage men to cut themselves off from their fellows and content themselves with their own study and meditation. There are few men whose preeminent fitness for an intellectual life would justify them in taking this course. And there, out in the world, there is need not so much of what we call "men of the world" as of men who are men in their own right. "It is easy in the world," says Emerson, "to live after the world's opinion; it is easy in solitude to live after our own; but the great man is he who in the midst of the crowd keeps with perfect sweetness the independence of solitude."

DEGREES AWARDED

Master of Arts

William Stanmore Cawthon, A.B. (University of Chicago).

Master of Arts in Education

Robert Solter Blanton, A.B. (University of Florida).

Bachelor of Arts

Thomas Joseph Swanson.
Leon William Traxler.

Bachelor of Arts in Education

Robert Lee Goulding.

Bachelor of Science

Thomas Buckingham Bird.
Samuel Sprague Holden.
Joseph Emory Williams.

Bachelor of Science in Agriculture

Donald Minor Badger.
Harold Gray Clayton.
Harold George Conant.
Joshua Fenby Gist.
James Thaddeus Grace.
Harold Charles Houghtaling.
Charles Andrew Martini.
James Anthony Miller.
William Henry Schulz.
Alexander Glencairn Shaw.
John Rice Springer.
Guy Hawkins Wilson.

Bachelor of Science in Civil Engineering

August DeWinkler.
Malcolm Collins McNeill.
John Carey Price.
Frank Marion Swanson.
Louis Earle Tenney.
Howard Alverson Thalimer.
David Lindsay White.

Bachelor of Science in Mechanical Engineering

William Hampton Crom.
Charles Clement LaRoche.

Bachelor of Science in Electrical Engineering

Neils Richard Alwyn Becker.
George Curtis Crom, Jr.
William Hampton Crom.
Frederick William Landis Hill.
Wallace Cecil Parham.

Bachelor of Laws

Leon Wilson Alexander.
Albert Charles Arnold.
Worthington Blackman, A.B. (Rollins College).
Archie Patterson Buie.
Maxwell Baxter.
Robert Abner Henderson, Jr.
William Luther Hill.
Albion Williamson Knight, A.B. (University of the South).
Thomas Wesley Moore.
Paul Darling Mobley.
Paul David McGary.
Frank E. Owen.
Peter Richard Perry.
Thomas Pitts Pruitt.
James Hardin Paterson.
Joseph Clayton Poppell.
Thomas Carleton Ray.
Robert Wooten Shackleford, A.B. (University of Florida).
Thaddeus Hentz Smith.
John Brannon Sutton.
Robert Rives Taylor, Jr.
Chester Maurice Wiggins.
Alonzo Dewitte Wilder.
Conlyn Lehman Welch.
Leon Nathaniel Lischkoff.

COMMENCEMENT CALENDAR

Sunday, June 7th

11:00 a. m.—Baccalaureate Sermon, by Samuel Chiles Mitchell, Ph.D., LL.D., President Medical College of Virginia.

Monday, June 8th

10:00 a. m.—Freshman and Sophomore Declamation Contest for Board of Control Medal.

4:00 p. m.—Annual Meeting of Alumni Association.

5:00-7:00 p. m.—Reception, by ladies of the Twentieth Century Club, at City Park, to members of the Senior classes and friends, alumni and faculty.

8:00 p. m.—Junior and Senior Oratorical Contests for Board of Control Medals.

The University Museum, located on the second floor of Science Hall, will be open to the public from 8:00 a. m. to 5:00 p. m.

Tuesday, June 9th

10:00 a. m.—Graduating Exercises. Commencement Address by Professor Ralph Barton Perry, Ph.D., Head of Department of Philosophy, Harvard University.

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